KG
11366
101

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11

APERTURED c STARS and others

γ Cygni
α Cygni
δ Canis Majoris

Capella

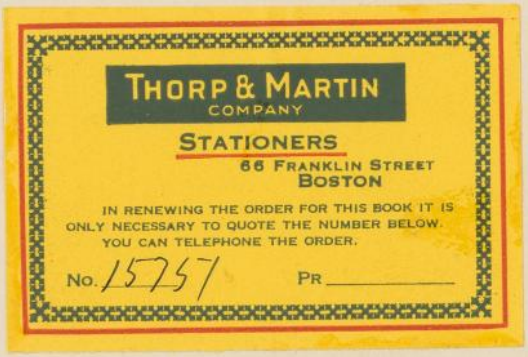
Pleiades 6° H 2604
2605

η Carinae	Pleiades	Vega	
X 13949	C 18592	c 18900	X 14882
14925	18600		X 14113
13408	18646		
13413	18655		
13371	18679		
13033	18689		
13035	18695		
	18716		
	18572		

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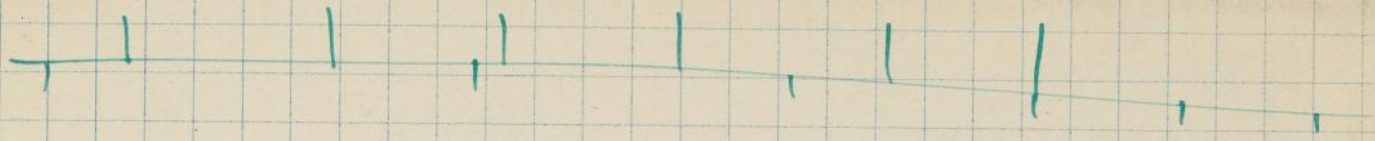
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Line series for spectral classes.

Series	Spectral Classes
b	B0, B1, B2, B3, B5, B8, B9
a	A0, A2, A5
g	F0, F2, F5, F8, G0, G5
k	K0, K2, K5
m	M (all subdivisions)

Standards for series

Series	μμ
b	
a	
g	
k	
m	

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Series

	b	d	a	g	k	m
1	5015 He	>	4481 Mg+	1) 3933 Ca+	Same	Same
β < 2	~~4861~~ ~~4801~~ He		3933 Ca+	2) 3970 Ca+		
β < 3	~~4921~~ 4713 He			3) 4005 Fe		
	~~4471~~			4) 4031 Mn		
4	~~4437~~ He			5) 4041 Mn		
	~~4437~~			6) 4046 Fe		
5	~~4389~~ He			7) 4064 Fe		
γ 6	4387			8) 4072 Fe		
7	4267 C+			9) 4077 Sr+		
8	4144			10) 4144 Fe		
δ > 9	4121			11) 4172 Fe+		
10	4026			12) 4179 Fe+		
> 11	4009			13) 4202 Fe		
12	~~3995~~			14) 4215 Sr+		
> 13	3889			15) 4227 Ca		
14	3867			16) 4233 Fe+		
>				17) 4250 Fe		
				18) 4272 Fe		
				~~4307 Fe~~		
				~~4308 Ti+~~		
				19) 4314 Sc+		
				20) 4321 Sc+		
				21) 4352 Fe+		
				22) 4374 Sc+		
				23) 4395 Ti+		
				24) 4400 Sc+		
				25) 4416 Fe+		
				26) 4444 Ti+		
				27) 4501 Ti+		
				28) 4508 Fe+		
				29) 4515 Fe+		
				30) 4520 Fe+		
				31) 4534 Ti+		
				32) 4549 Ti+		
				33) 4554 Ba+		
				34) 4583 Fe+		
				35) 4607 Sr		

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		π	m
β Cas	F5	71	
α Cas	K0	16	
η And	G5	8	
? θ Cas	A5	7	
χ Psc	K0	10	
α UMi	F8	..	
χ Cas	K0	17	
τ Cet	K0	315	
o Psc	K0	14	
δ Ari	K0	47	
α Per	F5	15	
o Tau	G5	5	
α Tau	K5	57	
α Aur	G0	75	0.2
ν Aur	K0	19	4.2
κ Aur	K0	14	4.4
o Gem	F0	25	4.9
α CMi	F5	312	0.5
β Gem	K0	101	1.2
ε Hya	F8	15	3.5
12 Hya	G5	-3	4.4
β LMi	K0	11	4.4
83 Leo	K0	31	6.2
γ Com	K0	1	4.6
α Boo	K0	80	0.2
ξ Boo	G5	168	4.6
44 Boo	G0	76	5.3
η CrB	G0	81	5.6
δ Ser	A7	16	4.2
η Dra	G5	42	2.9
ω Dra	F5	34	4.9
o Dra	K0	11	4.8
113 Her	G0	20	4.6
i Aql	K0	33	4.2
π Sgr	F2	16	3.0
θ Lyr	K0	-7	4.5
σ Dra	K0	181	4.8
α_1 Cap	G0p	-13	4.6
α_2	G5	-13	3.8
γ Cyg	F8	-2	2.3
f^2 Cyg	K0	13	4.8
l Peg	K0	25	4.2
72 Cyg	K0	12	5.0
11 Cep	K0	17	4.8
λ Cep			
π Peg	F5	26	3.6
3 And	K0	-4	4.9
55 Peg	K5	-3	4.7
π Cep	G5	0	4.6
ν Peg	G0	25	4.6
α Aur	G0	75	0.2
α θ			

K0

α Cas	11 Cep	F
χ Psc	3 And	β Cas
χ Cas		α UMi
* σ Cet	K5	α Per
o Psc	α Tau	o Gem
δ Ari	55 Peg	* α CMi
ν Aur		ε Hya
κ Aur	G	δ Ser
* β Gem	η And	ω Dra
β LMi	o Tau	π Sgr
83 Leo	12 Hya	γ Cyg
γ Com	* ξ Boo	λ Cep
l Boo	44 Boo	
o Dra	* η CrB	
i Aql	η Dra	
θ Lyr	113 Her	
* σ Dra	α_1 Cap	
f^2 Cyg	α_2 Cap	
l Peg	π Cep	
72 Cyg	ν Cep	

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Publications

H.C. 305 } in press ✓
H.C. 306 } ✓

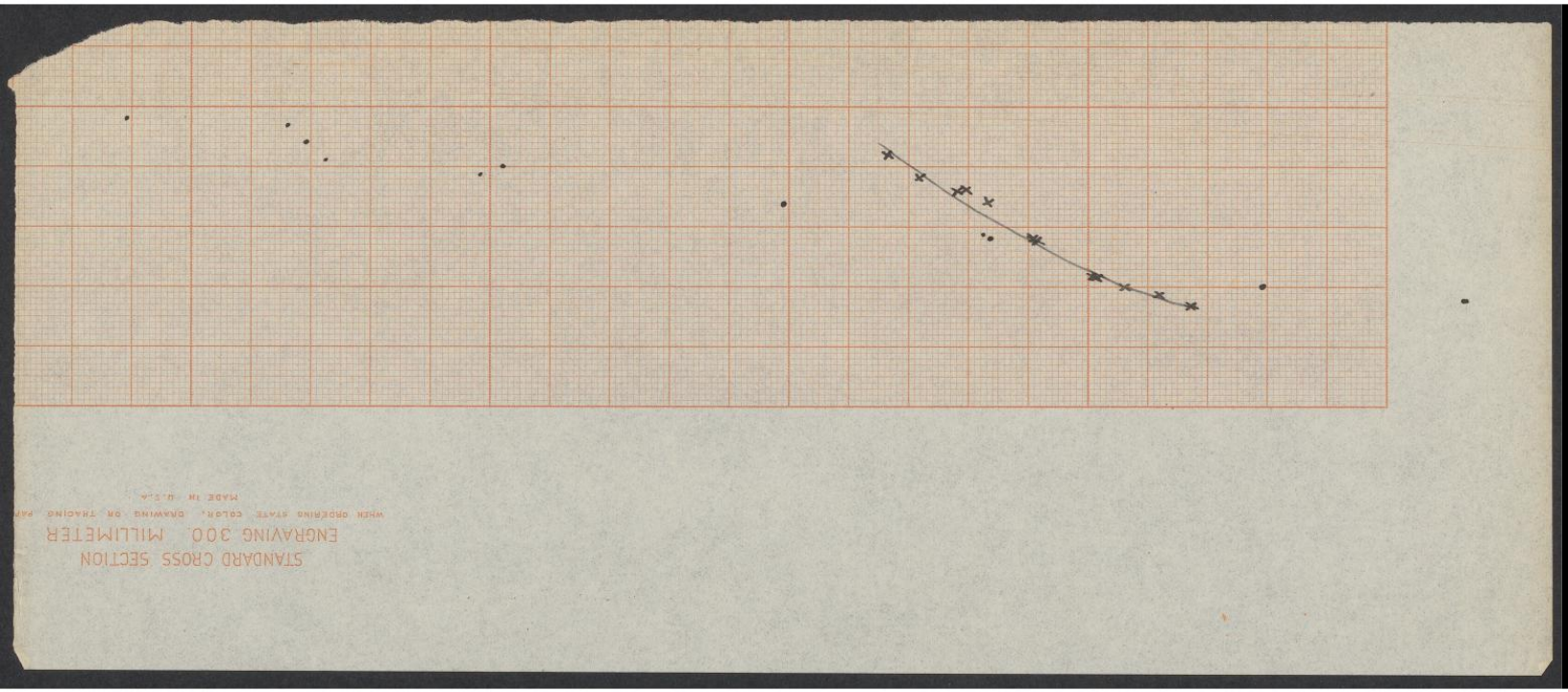
H.C. 307 Chromospheric intensities
Change of intensity of lines towards red end of spectrum.
Effects on individual lines galley

H.C. 308 Mira ✓ galley
H.C. 309 Pleiades background F.S.H. "
H.C. 310 in MS. (W.J.L.) ✓ page
H.C. 311 B.P.G. printed ✓ ✓
312 M.H. in press H.B. W.J.L's nova note? ✓
313 H.S. printed ✓ ✓
314 in MS page
315 in MS page
316 ? MS

H.R. 37 W.J.L, B.P.G in press ✓
38 } B.P.G ?
39 }

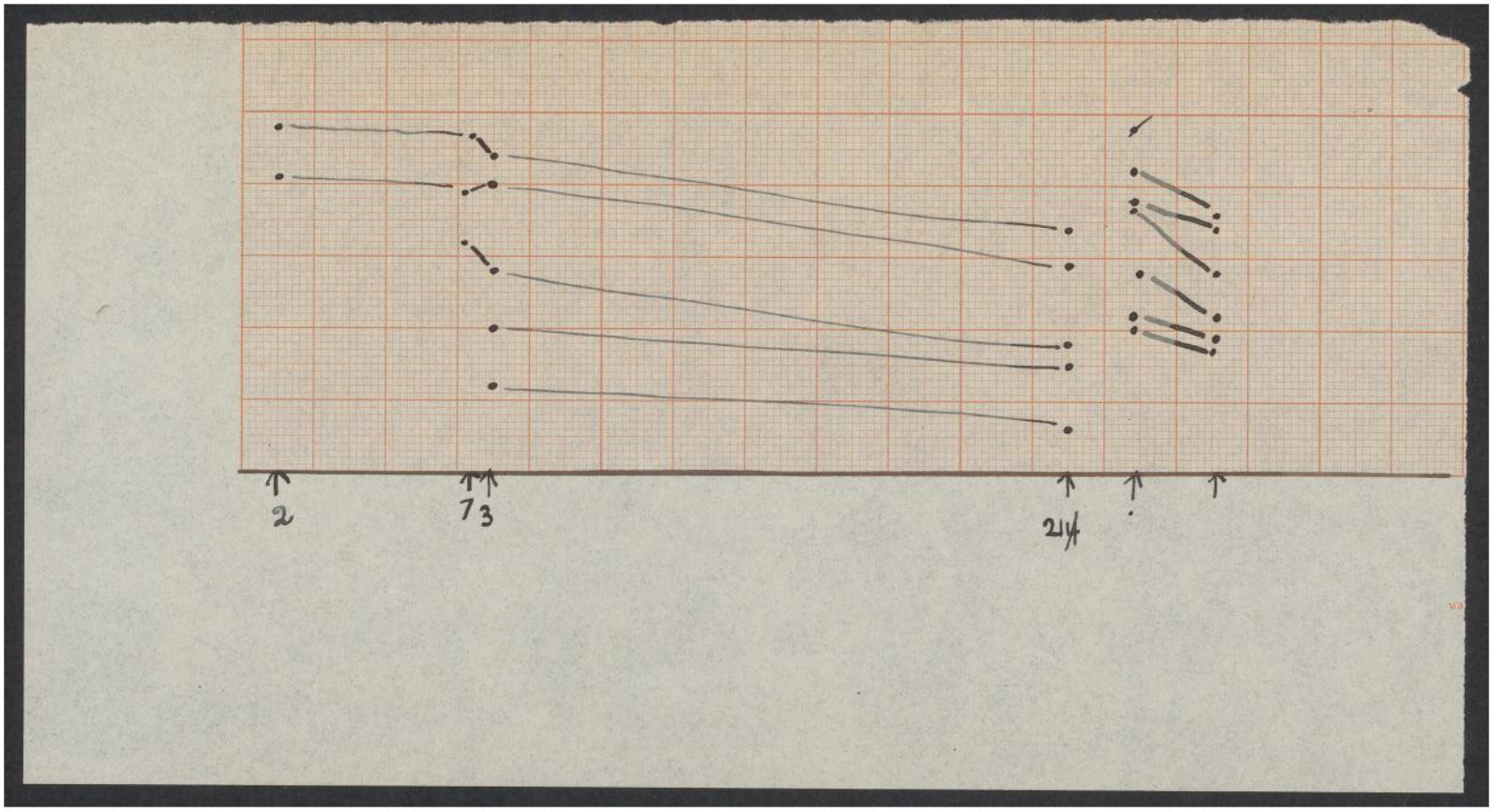
ζ Ursae Majoris { Theory.
Other suitable binaries. Harvard I. V Ne Plates (about sixty) never worked up
μ Scorpii? Suitable companion available

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C-H. Payne

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Apertured c stars
and related plates.

γ Cygni c 18482 ap. 1, 3, 5, 7
Exp. 15^m each, load 120:
Plate much fogged.

1st reduction curve, compiled from all spectra, gave inconsistent results, traced to variation in total deflection:—

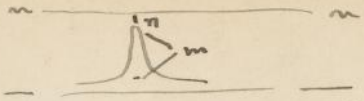
ap. 1
ap. 3
ap. 5
ap. 7

Second reduction curve (green entries) made by combining results from ap. 1 and ap. 5, and those from ap. 3 and ap. 7.

In reductions, values of $n < 0$ are omitted (i.e. where plate was more transparent than clear film.)

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Measures

18482 γ Cygni Measured in fiftieths of an inch, from "light."

μφ	b7	I m	I m+n	(3) m	(3) m-n	(5) m	(5) m-n	(7) m	(7) m-n
1	3933	12	1173	-2.0	8.7				
2	3945	13	18	2.5	7.3				
3	3952	12	19	1.2	7.3				
4	3956	13	19	3.0	7.9				
5	3958	14	19	5.0	8.0				
6	3970	2	20	-1.7	10.2	-2.7	4.0		
7	3982	16	21	3.4	9.2	0.5	4.2		
8	3984	20	22	7.4	9.6	2.0	4.3		
9	3986	–	–	7.0	9.8	–	–		
10	3987	20	22			2.2	4.3		
11	3989	–	–	–	–	–	–		
12	3990	–	–	–	–	–	–		
13	3994	20	23	7.0	10.0	2.1	4.7		
14	3995	18	23	6.0	10.3	1.0	4.7		
15	3997	20	23	–	–	–	–		
16	4002-4	21	23	9.5	11.1	2.1	4.8		
17		21	23	10.1	11.2	1.5	4.9		
18	4005	19	23	7.6	11.6	3.2	5.0		
19	4012	23	24	[10.2	12.2]	3.8	5.0		
20	4014	22	24	10.0	13.0	3.3	5.6		
21	4018	21	25	10.4	13.3	4.1	5.8		
22	4022-3	23	25	9.8	14.0	4.0	6.1		
23	4028	21.5	25.4	8.9	14.4	2.2	6.3		
24	4030	24.5	25.6	10.5	14.6	5.0	6.8		
25	4031	20.5	25.9	7.2	14.7	3.8	6.8		
26	4033	21.1	25.9	8.6	14.7	4.3	6.8		
27	4035	23.0	25.9	10.0	14.6	5.7	7.0		
28	4036	24.5	26.0	12.0	14.6	–	–		
29	4041	23.6	26.0	11.0	14.7	4.2	7.1		
30	4046	21.9	26.0	9.8	14.8	3.4	7.4		

Tracing

Tracing

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Reductions

(All erased entries are From 1st reduction curve)

2nd reduction entries in green & red.

Ap. 1			Ap. 3			Ap. 5			Ap. 7			Mean Residuals (Δm)	Residuals in hundredths of mag	μ	db %
[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm				
2.64	1.20	1.44	4.0?	2.85	1.85?										
~~2.58~~	~~0.75~~	~~1.83~~	~~3.28~~	~~1.39~~	~~1.89~~	—	—	—	—	—	—	1.44	—	—	.73
1.50	1.12	.38	2.85	2.33	52										
~~1.01~~	~~0.69~~	~~.32~~	~~2.30~~	~~1.56~~	~~74~~	—	—	—	—	—	—	.45	7,7	7	.34
1.57	1.05	.52	3.08	2.33	75										
~~1.08~~	~~0.63~~	~~45~~	~~2.54~~	~~1.56~~	~~98~~	—	—	—	—	—	—	.64	12,11	12	.45
1.50	1.05	.45	2.79	2.25	54										
~~1.01~~	~~0.63~~	~~38~~	~~2.21~~	~~1.48~~	~~73~~	—	—	—	—	—	—	.50	5,4	4	.37
1.42	1.05	.37	2.56	2.26	30										
~~0.94~~	~~0.63~~	~~31~~	~~1.88~~	~~1.47~~	~~41~~	—	—	—	—	—	—	.34	3,4	4	.27
2.50	0.97	1.53	3.20	2.04	1.46	4.00	2.24	1.76							
~~2.40~~	~~0.58~~	~~1.82~~	3.19	~~1.41~~	~~1.78~~	3.46	~~2.04~~	~~1.42~~	—	—	—	1.58	5,12,18	13	.77
~~1.80~~	0.90	.38	2.75	2.14	61	2.73	2.28	45							
~~2.46~~	~~0.52~~	~~28~~	~~2.13~~	~~1.33~~	~~80~~	~~2.67~~	~~2.01~~	~~66~~	—	—	—	.48	10,13,3	10	.36
0.58			~~2.16~~	2.14	13	2.50	2.26	24							
~~2.40~~	~~0.46~~	~~12~~	~~1.55~~	~~1.29~~	~~26~~	2.40	2.00	40	—	—	—	.17	2,4,7	5	.14
0.97	0.82	15	2.27												
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	.16
0.97	0.82	15	2.35	2.05	30	2.48	2.26	22							
~~0.58~~	~~0.46~~	~~12~~	1.60	1.27	~~33~~	2.35	2.00	~~35~~	—	—	—	.19	4,1,3	2.8	↓
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.98	0.74	24	2.35	2.09	26	2.49	2.24	25							
~~0.58~~	~~0.41~~	~~17~~	1.60	1.25	~~35~~	2.38	1.94	~~44~~	—	—	—	.25	1,1,0	.81	.21
1.12	0.74	38	2.45	2.09	36	2.65	2.24	41							
~~0.69~~	~~0.41~~	~~28~~	1.73	1.23	~~50~~	2.58	1.94	~~64~~	—	—	—	.38	0,2,3	2	.30
0.97	0.74	23													
~~0.58~~	~~0.41~~	17	—	—		—	—		—	—	—	.23	—	—	.20
0.90	0.74	16	2.09	1.93	16	2.49	2.22	27							
~~0.52~~	~~0.41~~	~~11~~	1.30	1.16	~~14~~	2.38	1.92	~~46~~	—	—	—	.20	4,4,7	11.6	.17
.90	.74	16	2.04	1.94	0.10	2.57	2.20	37							
~~0.52~~	~~0.41~~	~~11~~	1.24	1.15	~~09~~	2.48	1.90	~~58~~	—	—	—	.21	5,11,16	20.04	.18
1.05	0.74	31	2.29	1.86	41	2.38	2.18	20							
~~0.63~~	~~0.41~~	~~22~~	1.52	1.11	~~41~~	2.17	1.88	~~29~~	—	—	—	.31	0,10,11	8.6	.25
0.74	0.64	10													
~~0.41~~	~~0.36~~	~~05~~	—	—	-	2.29	2.18	11	—	—	—	.10	0,1	.7	.09
0.82	0.64	18	2.09	1.75	34	2.32	2.13	19	—	—	—	.24	6,10,5	7.3	.20
0.90	0.54	36	2.00	1.67	33	2.23	2.12	11	—	—	—	.27	9,6,16	11.1	.22
0.74	0.54	20	2.05	1.64	41	2.24	2.07	17	—	—	—	.26	6,15,9	10.7	.21
0.83	0.50	33	2.15	1.61	54	2.48	2.05	43	—	—	—	.33	10,14,0	8.6	.33
0.59	0.48	11	1.99	1.58	41	2.18	2.02	16	—	—	—	.23	12,18,7	13.1	.20
0.94	0.45	49	2.33	1.57	76	2.29	2.02	27	—	—	—	.51	2,25,24	20.0	.38
0.89	0.45	44	2.17	1.57	60	2.26	2.02	24	—	—	—	.43	1,17,19	14.7	.33
0.74	0.45	29	2.09	1.58	51	2.13	2.00	13	—	—	—	.31	2,20,18	15.6	.25
0.59	0.44	15	1.84	1.58	26	—	—	—	—	—	—	.20	5,6	5.5	.17
0.93	0.44	49	1.94	1.57	37	2.28	1.98	30	—	—	—	.39	10,2,9	6.9	.30
0.82	0.44	38	2.05	1.55	50	2.38	1.96	42	—	—	—	.43	5,7,1	5	.33

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Measures

		aperture 1		aperture 3		Aperture 5		aperture 7		
		n	m+n	n	m+n	n	m+n	n	m+n	
31	4048	24.3	25.9	11.2	14.8	5.5	7.6	–	–	03
32	4050	23.5	25.9	12.5	14.8	5.5	7.8	–	–	0.
33	4052	–	–	–	–	–	–	–	–	–
34	4054	22.5	25.9	9.3	14.9	3.6	8.0	–	–	00
35	4057	24.6	25.9	11.1	14.9	4.9	8.0	–	–	0.
36	4059	24.6	25.9	12.7	14.9	6.0	8.0	–	–	0.
37		–	–	11.9	14.9	4.6	8.1	–	–	–
38	4064	22.1	25.9	10.0	14.9	3.9	8.2	-0.3	2.2	04
39	4067	23.8	26.0	11.0	14.9	4.6	8.3	0.3	2.2	04
40	4072-4	23.8	26.0	10.9	14.9	4.4	8.7	-0.4	2.2	0.
41	4078	18.8	26.0	7.5	14.9	2.7	8.9	-0.5	2.2	0
42	4083	–	–	–	–	6.9	9.0	–	–	–
43		24.8	26.4	12.0	14.9	6.4	9.1	–	–	0.
44	4085	23.7	26.4	10.7	14.9	5.5	9.2	–	–	0.
45	4087	23.7	26.4	10.7	14.9	5.5	9.2	–	–	0.
46	4092	–	–	–	–	–	–	–	–	
47	4093	25.1	26.3	13.9	14.9	8.2	9.4	0.0	2.2	0.
48		25.5	26.5	14.1	15.0	8.2	9.5	0.7	2.2	0.
49		24.3	26.7	12.3	~~15.0~~ 15.1	6.5	9.5	0.0	2.2	0.
50	4098	24.2	26.7	9.0	15.2	4.9	9.5	-0.8	2.1	0.
51	4101	18.0	26.7	~~16.8~~	15.2	2.8	9.6	-1.2	2.0	1.
52	4106	25.0	26.8	13.0	15.4	7.2	9.5	0.4	2.1	0.
53	4107	23.2	26.8	11.1	15.5	5.9	9.7	-0.9	2.0	0.
54	4109	–	–	–	–	–	–	–	–	–
55	4111	25.2	26.8	14.4	15.6	7.1	9.9	0.4	2.0	0.
56	4113 4115	–	–	–	–	8.2	9.9	–	–	–
57	4119	23.5	26.8	11.0	15.9	6.8	9.9	-0.7	2.0	0.
58	4123	23.5	26.8	11.0	15.9	5.3	10.0	0.0	2.0	0.
59	4128	22.0	26.8	9.5	16.1	4.8	10.1	-0.9	2.0	0.
60	4132	22.6	26.8	11.1	16.1	5.2	10.1	0.0	2.0	0.

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Reductions

Ap. 1			Ap. 3			Ap. 5			Ap. 7			Mean	Residuals	μ	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	Δm	.01 m	.01 m	%
0.60	0.44	16	1.93	1.55	38	2.14	1.95	19							
034	026	08	167	089	78	180	152	28	–	–	–	.24	8,14,5	9.7	.20
0.69	0.44	25	1.79	1.55	24	2.14	1.93	21	–	–	–	.23	2,1,2	1.7	.19
–	–	–	–	1.56	–	–	–	–	–	–	–	–	–	–	
0.78	0.44	34	2.12	1.55	57	2.33	1.92	41							
042	026	16	132	088	44	211	147	64	–	–	–	.43	9,14,2	9.6	.33
0.59	0.44	15	1.95	1.55	40	2.20	1.92	28	–	–	–	.28	13,12,0	10.2	.23
0.59	0.44	15	1.79	1.55	24	2.09	1.92	17	–	–	–	.19	4,5,2	3.9	.16
–	0.44	–	1.85	1.55	30	2.24	1.90	34	–	–	–	.32	2,2	2	.26
0.82	0.44	38	2.04	1.55	49	2.30	1.90	40	3.27	2.89	38				
046	026	20	125	088	37	206	144	62	285	235	50	.41	3,8,1,3	4.5	.32
0.62															
01	0.44	18	1.94	1.55	39	2.24	1.88	36	3.17	2.89	28	.30	12,9,6,2	8.1	.24
0.62	0.44	18	1.95	1.55	40	2.25	1.85	40	3.30	2.89	41	.35	17,5,5,6	9.6	.28
1.03	0.44	59	2.30	1.55	75	2.42	1.79	63	3.40	2.90	50				
064	025	39	154	088	66	226	137	89	288	235	53	.62	3,13,1,12	9	.44
–	–	–	–	–	–	2.00	1.83	17	–	–	–	.17	–	–	.15
0.55	0.38	17	1.84	1.55	29	2.05	1.82	23	–	–	–	.23	6,6,0	4.9	.19
0.67	0.38	29	1.97	1.55	42	2.14	1.81	33	–	–	–	.35	6,7,2	5.4	.28
0.67	0.38	29	1.97	1.55	42	2.14	1.81	33	–	–	–	.35	6,7,2	5.4	.28
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
0.54	0.40	14	1.65	1.55	10	1.90	1.80	10	3.22	2.88	[34]	.11	3,1,1	2	.10
0.49	0.37	12	1.59	1.54	05	1.90	1.79	11	3.10	2.88	22	.12	0,7,1,10	6.1	.11
0.61	0.32	29	1.82	1.54	28	2.05	1.79	26	3.22	2.88	[34]	.28	1,0,2	1.4	.23
0.63	0.32	31	2.14	1.54	60	2.19	1.79	40	3.65	2.90	[75]	.44	13,16,4	12.1	.33
1.13	0.32	.81	2.38	1.54	.84	2.42	1.79	.65	3.75	2.91	[84]	.77	4,7,12	8.3	.48
0.54	0.32	22	1.74	1.50	24	1.95	1.79	19	3.16	2.90	[26]	.28	2,1,4,3	2.6	.19
0.73	0.32	41	1.93	1.49	44	2.10	1.77	33	3.75	2.91	[84]	.39	2,5,6	4.6	.30
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
0.52	0.32	20	1.60	1.48	12	1.99	1.76	23	3.14	2.91	25	.20	0,8,3,5	4.9	.17
–	–	–	–	–	–	1.90	1.76	14	–	–	–	.14	–	–	.12
0.69	0.32	37	1.94	1.45	49	2.02	1.76	26	3.50	2.91	[59]	.37	0,12,11	9.1	.29
0.69	0.32	37	1.94	1.45	49	2.16	1.75	41	3.22	2.91	[31]	.42	5,7,1	5	.32
0.72	0.32	50	2.09	1.44	65	2.20	1.74	46	3.75	2.91	[84]	.54	4,11,8	8.1	.39
0.77	0.32	45	1.93	1.44	49	2.15	1.74	44	3.22	2.91	[31]	.47	2,2,1	6.7	.35

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Measures

		Aperture 1		Aperture 3		Aperture 5		Aperture 7		
		m	m+n	m	m+n	m	m+n	m	m+n	Σm
61	4136	24.0	26.5	13.1	16.1	6.8	10.1	–	–	0.6
62	4139	25.0	26.7	13.9	16.1	7.7	10.2	–	–	0.
63	4144	22.6	26.4	10.0	16.2	4.6	10.3	–	–	0.
64		25.8	26.8	–	–	7.9	10.4	–	–	0.
65	4149	24.8	26.9	11.7	16.2	6.0	10.4	–	–	0
66		25.2	26.9	13.3	16.3	8.1	10.5	–	–	0.
67	4155	24.1	26.9	12.2	16.3	7.1	10.5	–	–	0.
68	4157	24.0	26.9	12.2	16.4	7.8	10.6	–	–	0.
69	4162	24.2	26.9	12.7	16.8	5.6	10.7	–	–	0
70	4164	25.4	26.9	14.0	16.8	7.1	10.7	–	–	0.
71	4166	–	–	–	–	–	–	–	–	
72	4167	25.8	27.0	15.0	17.0	7.6	10.7	–	–	0.4
73	4172	21.1	26.8	8.2	17.0	4.7	10.8	–	–	0.8
74	4177	21.3	26.9	9.1	17.1	3.8	10.9	–	–	0.9
75	4182	25.1	27.0	12.0	17.1	6.4	10.9	–	–	0.
76	4184	24.2	27.0	12.1	17.1	5.2	10.9	–	–	0.6
77	4188	23.4	27.0	11.0	17.2	5.7	11.0	–	–	0.7
78	4191	24.9	27.1	12.8	17.3	8.0	11.0	–	–	0.6
79	4196	25.1	27.1	12.5	17.4	7.0	11.1	–	–	0.5
80	4198	23.3	27.2	10.5	17.6	5.1	11.1	–	–	0.7
81	4202	24.1	27.3	11.5	17.6	6.0	11.1	–	–	0.6
82	4205	23.5	27.4	10.5	17.6	4.5	11.1	–	–	0.6
83	4209	24.8	27.5	13.5	17.6	7.0	11.2	0.4	2.9	0.5
84		24.8	27.5	14.0	17.7	7.4	11.2	0.4	2.9	0.5
85	4215	24.3	27.5	10.6	17.8	5.8	11.2	0.3	3.0	0.6
86	4219	26.4	27.6	14.7	17.9	9.2	11.3	1.1	3.1	0.3 ~~0.4~~
87	4222	26.0	27.8	13.9	17.9	8.0	11.4	0.8	3.1	0.4 ~~0.6~~
88	4225	24.0	27.9	11.0	17.9	5.0	11.5	0.0	3.2	0.1 ~~0.8~~
89	4227	22.3	27.9	10.4	17.9	4.2	11.6	0.0	3.2	0.8
90	4233	24.8	28.0	11.1	17.9	6.3	11.7	0.3	3.3	0.5

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Ap. 1			Ap. 3			Ap. 5			Ap. 7			Mean	Residuals	μ	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	Δm	.01m	.01m	%
0.64	0.37	27	1.74	1.44	30	2.01	1.74	27	–	–	–	.28	1, 2, 1	1.4	.23
0.54	0.35	19	1.65	1.44	21	1.94	1.73	21	–	–	–	.20	1, 1, 1	1	.17
0.77	0.33	44	2.04	1.43	61	2.23	1.72	51	–	–	–	.52	8, 9, 1	6.9	.38
0.47	0.33	14	–	–	–	1.92	1.71	21	–	–	–	.17	3, 4	3.6	.15
0.55	0.32	23	1.87	1.43	44	2.10	1.71	39	–	–	–	.35	12, 9, 4	8.0	.28
0.52	0.32	20	1.66	1.42	24	1.90	1.70	20	–	–	–	.22	2, 2, 2	2	.18
0.63	0.32	31	1.83	1.42	41	1.99	1.70	29	–	–	–	.34	3, 7, 5	5.2	.27
0.64	0.32	32	1.83	1.41	42	1.93	1.69	24	–	–	–	.32	0, 10, 8	7.4	.26
0.63	0.32	31	1.78	1.37	41	2.13	1.68	45	–	–	–	.39	8, 2, 6	5.9	.30
0.50	0.32	18	1.64	1.37	27	1.89	1.68	21	–	–	–	.25	7, 2, 6	5.4	.21
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.45	0.31	14	1.54	1.36	18	1.95	1.68	27	–	–	–	.20	6, 2, 7	5.4	.17
0.89	0.32	57	2.23	1.36	87	2.22	1.67	55	–	–	–	.66	9, 21, 11	14.6	.46
0.87	0.32	55	2.13	1.35	78	2.30	1.66	64	–	–	–	.66	11, 12, 2	9.4	.46
0.53	0.31	22	1.84	1.35	49	2.05	1.66	39	–	–	–	.37	15, 12, 2	11.1	.29
0.63	0.31	32	1.83	1.35	48	2.16	1.66	50	–	–	–	.43	11, 5, 2	7.0	.33
0.71	0.31	40	1.94	1.34	60	2.12	1.65	47	–	–	–	.49	7, 11, 2	7.6	.36
0.55	0.30	25	1.76	1.33	43	1.93	1.65	28	–	–	–	.32	7, 11, 4	7.8	.26
0.53	0.30	23	1.79	1.32	47	2.00	1.65	35	–	–	–	.35	12, 12, 0	9.7	.28
0.71	0.28	43	1.99	1.30	69	2.17	1.65	52	–	–	–	.55	12, 14, 3	10.7	.40
0.63	0.26	37	1.89	1.30	59	2.09	1.65	44	–	–	–	.47	10, 12, 3	9.1	.35
0.69	0.25	44	1.99	1.30	69	2.23	1.65	58	–	–	–	.56	12, 13, 2	10.2	.40
0.55	0.24	31	1.70	1.30	40	2.00	1.65	35	3.15	2.80	35	.35	4, 5, 0	3.7	.28
0.55	0.24	31	1.64	1.29	35	1.13	1.65	48	3.15	2.80	35	.37	6, 2, 11, 2	6.4	.29
0.61	0.23	38	1.98	1.27	71	2.10	1.65	45	3.17	2.79	38	.48	10, 23, 3, 10	13.6	.36
0.37	0.22	15	1.57	1.26	31	1.82	1.63	19	3.05	2.78	27	.23	8, 8, 4, 4	6.3	.26
0.44	0.17	27	1.65	1.26	39	1.92	1.63	29	3.07	2.78	29	.31	4, 8, 2, 2	5.1	.25
0.64	0.17	47	1.94	1.26	68	2.18	1.62	56	3.22	2.76	46	.54	7, 14, 2, 8	8.8	.39
0.80	0.17	63	2.00	1.26	74	2.27	1.61	66	3.22	2.76	46	.62	1, 12, 4, 16	10.1	.44
0.55	0.17	38	1.76	1.26	50	1.97	1.60	47	3.23	2.75	47	.48	10, 14, 1, 1	8.6	.36

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Measures

		aperture 1		Aperture 3		Aperture 5		Aperture 7		C
		n	m+n	n	m+n	n	m+n	n	m+n	Σn
91	4235	25.5	28.0	13.4	18.0	7.1	11.7	1.1	3.7	0.5
92	4239	26.0	28.0	13.8	18.0	7.9	11.7	0.9	3.6	0.4
93		27.0	28.0	15.0	18.0	9.9	11.8	1.5	3.6	0.3
94	4243	25.0	28.0	12.4	18.1	5.0	11.9	0.3	3.8	0.1
95	4247	26.0	28.1	13.9	18.2	7.5	11.9	1.6	3.9	0.4
96	4250	~~25.9~~ 27.2	~~28.1~~ 28.1	14.9	18.2	8.9	11.9	1.6	3.9	0.2
97	4258	~~25.9~~ 26.2	~~28.1~~ 28.1	14.5	18.2	8.0	12.0	1.9	3.9	0.4
98	4260	~~26.2~~ 27.6	~~28.1~~ 28.4	14.0	18.3	8.2	12.0	1.3	4.0	0.4
99	4272	26.7	28.5	12.5	18.4	7.8	12.1	1.8	4.0	0.3
100	4274	27.1	28.6	15.4	18.7	9.9	12.2	0.1	4.0	0.3
101		–	–	–	–	–	–	–	–	–
102		–	–	–	–	–	–	–	–	–
103		27.9	28.6	16.2	18.8	–	–	2.3	4.1	0.1
104	4283	27.2	28.7	15.9	18.8	–	–	2.8	4.1	0.2
105	4288	27.0	28.9	13.6	18.9	–	–	–	–	0.3
106	4290	24.4	28.9	11.2	18.9	5.4	12.5	0.8	4.2	0.6
107	4294	27.0	29.0	14.3	18.9	8.0	12.6	1.6	4.4	0.3
108	4296	27.2	29.0	15.2	18.9	9.4	12.7	2.0	4.4	0.2
109	4297	24.5	29.0	10.9	18.9	5.0	12.8	0.3	4.4	0.6
110	4300	25.0	29.0	11.9	18.9	5.6	12.8	1.0	4.6	0.5
111	4306	27.2	29.1	14.1	18.9	8.0	12.8	1.7	4.7	0.2
112	4308	27.1	29.2	18.9	19.0	7.6	12.8	1.8	4.8	0.3
113	4309 4315	25.9	29.2	11.3	19.0	5.8	12.9	1.1	4.9	0.4
114		–	–	17.3	19.0	11.0	12.9	2.6	5.0	–
115	4321	27.9	29.3	15.9	19.1	9.0	12.9	2.5	5.1	0.1
116	4326	26.7	29.4	12.8	19.1	7.0	13.0	1.6	5.1	0.3
117	4331	28.1	29.5	15.0	19.1	8.6	13.0	3.0	5.2	0.1
118	4334	28.4	29.6	16.0	19.1	10.0	13.1	2.6	5.2	0.1
119	4337	24.6	29.6	9.9	19.2	4.0	13.1	0.9	5.2	0.5
120	4341	22.2	29.7	7.4	19.2	2.5	13.1	0.2	5.2	0.8

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Reductions

Aperture 1			Aperture 3			Aperture 5			Aperture 7			Mean	Residuals	μ	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	Δm	.01m	.01m	%
0.50	0.17	33	1.70	1.26	44	1.99	1.60	39	3.04	2.74	30	.36	3,8,3,6	5.4	.28
0.44	0.17	27	1.66	1.26	40	1.92	1.60	32	3.07	2.73	34	.33	6,7,1,1	4.6	.24
0.31	0.17	14	1.54	1.26	28	1.76	1.59	17	2.98	2.72	26	.21	7,7,4,5	5.9	.18
0.54	0.17	37	1.81	1.25	56	2.18	1.58	60	3.16	2.68	48	.50	13,6,10,2	8.7	.37
0.44	0.15	29	1.65	1.24	41	1.96	1.58	38	2.97	2.67	30	.34	5,7,4,4	5.1	.27
0.29	0.15	14	1.55	1.24	31	1.83	1.58	25	2.97	2.67	30	.25	11,6,6,5	6.7	.21
0.45	0.15	30	1.59	1.24	35	1.91	1.58	33	2.92	2.67	25	.31	1,4,2,6	3.7	.25
0.42	0.15	27	1.64	1.23	41	1.90	1.58	32	3.01	2.66	35	.34	7,7,2,1	6.0	.27
0.35	0.09	26	1.79	1.21	58	1.93	1.57	36	2.93	2.66	(27)	.44	18,14,8,10	13.0	.33
0.30	0.08	22	1.57	1.20	31	1.83	1.56	27	3.20	2.66	54	.27	5,4,0	3.7	.22
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.17	0.08	09	1.43	1.18	25	–	–	–	2.88	2.66	22	.19	10,6,3	6.9	.16
0.29	0.05	24	1.46	1.18	28	–	–	–	2.82	2.66	16	.23	1,5,7	5	.19
0.31	0.00	31	1.65	1.17	51	–	–	–	–	–	–	.41	10,10	10	.31
0.60	0.00	60	1.52	1.17	65	2.15	1.54	61	3.07	2.65	42	.57	3,8,4,15	8.8	.41
0.31	-0.02	33	1.61	1.17	44	1.91	1.53	38	2.97	2.62	35	.38	5,6,0,3	4.2	.30
0.29	-0.02	31	1.53	1.17	36	1.80	1.52	28	2.91	2.62	29	.31	0,5,3,2	3.1	.25
0.60	-0.02	62	1.95	1.17	78	2.18	1.51	67	3.16	2.62	54	.65	3,13,2,11	8.7	.45
0.54	-0.02	56	1.85	1.17	68	2.13	1.51	62	3.05	2.60	45	.58	2,10,4,13	8.5	.41
0.29	-0.05	34	1.64	1.17	47	1.91	1.51	40	2.95	2.59	36	.39	5,8,1,3	5	.30
0.30	-0.07	37	1.65	1.16	49	1.95	1.51	44	2.93	2.57	36	.42	5,7,2,6	6.3	.32
0.45	-0.07	52	1.91	1.16	75	2.11	1.51	60	3.04	2.56	48	.59	7,16,1,11	10.3	.42
–	–	–	1.33	1.16	17	1.66	1.51	15	2.84	2.55	29	.20	3,5,9	6.1	.17
0.17	-0.10	27	1.45	1.16	29	1.83	1.51	32	2.85	2.54	31	.30	3,1,2,1	2	.24
0.32	-0.12	44	1.76	1.16	60	2.00	1.51	50	2.97	2.54	43	.49	5,11,1,6	6.7	.36
0.16	-0.15	31	1.54	1.16	38	1.86	1.50	36	2.79	2.53	26	.33	2,5,3,7	4.6	.26
0.10	-0.17	27	1.45	1.16	29	1.75	1.49	26	2.84	2.53	31	.28	1,1,2,3	2	.23
0.58	-0.17	75	2.05	1.15	90	2.29	1.49	80	3.07	2.53	54	.75	0,15,10,21	13.8	.49
0.80	-0.20	1.00	2.31	1.15	1.16	2.44	1.49	82	3.27	2.53	[54]	1.04	4,10,14	10.1	.62

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Measures

		Aperture 1		Aperture 3		Aperture 5		Aperture 7		C
		m	m+m	m	m+m	m	m+m	m	m+m	Σm
121	4344	27.0	29.8	14.0	19.2	7.5	13.1	1.6	5.3	0.
122	~~43~~	28.7	29.9	17.1	19.2	10.5	13.1	3.7	5.7	0.
123	4352	27.0	29.9	13.2	19.3	5.7	13.0	1.3	5.7	0.
124		28.7	30.0	17.0	19.4	10.9	13.1	3.7	5.9	0.
125	4359	28.5	30.0	15.8	19.4	8.2	13.1	3.1	5.9	0.
126		—	—	18.2	19.4	11.4	13.2	4.1	5.9	-
127	4367	27.8	30.0	15.7	19.4	8.8	13.2	3.0	5.9	0.2
128	4375	27.0	30.0	13.0	19.4	6.8	13.2	0.9	5.9	0.
129	4384	26.2	30.1	11.0	19.6	5.9	13.2	1.5	6.0	0.
130	4391	29.0	30.1	16.4	19.7	10.0	13.3	3.0	6.0	-0.
131	4395	28.0	30.1	14.3	19.8	8.3	13.4	2.1	6.0	0.
132	4400	27.1	30.1	13.6	19.9	7.0	13.5	1.4	6.1	0.3
133	4405	29.2	30.1	17.2	19.9	11.2	13.5	3.7	6.1	-0.
134	4408	28.3	30.1	15.6	19.9	8.2	13.6	2.6	6.1	0.
135	4415	28.0	30.1	14.0	19.9	7.4	13.7	2.3	6.2	0.
136	4416	27.6	30.1	13.0	19.9	7.5	13.7	1.7	6.3	0.
137	4423	29.0	30.2	16.1	19.9	10.0	13.8	2.7	6.3	-0.
138	4427	29.3	30.2	17.3	20.0	10.1	13.8	4.0	6.3	-0.
139	4430	29.3	30.2	16.1	20.0	9.9	13.8	3.1	6.5	-0.
140	4435	~~28~~.8	30.2	15.6	20.0	9.5	13.9	2.9	6.6	0.0
141	4444	27.1	30.4	12.3	20.0	7.0	14.0	2.0	6.6	0.3
142	4450	29.2	30.4	16.5	20.0	9.9	14.1	3.3	6.8	-0.
143	4455	28.8	30.4	15.8	20.2	8.6	14.1	2.8	6.8	0.0
144	~~4459~~	29.0	30.4	16.5	20.2	10.1	14.1	4.3	6.8	-0.
145	4459 4462	29.0	30.5	15.8	20.2	9.9	14.1	3.5	6.9	-0.
146	4462 ~~4467~~	29.5	30.5	15.0	20.2	11.1	14.2	3.1	6.9	-0.
147	4467	~~28~~.6	30.6	15.0	20.2	8.4	14.2	3.7	6.9	0.0
148	~~4482~~	30.0	30.6	16.7	20.2	10.8	14.2	5.2	7.0	-0.
149	4482 4490	29.2	30.6	16.0	20.2	9.8	14.5	3.5	7.0	-0.
150	4490 ~~449~~	29.5	30.6	16.6	20.3	9.6	14.7	3.0	7.0	-0.

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Reductions

Aperture 1			Aperture 3			Aperture 5			Aperture 7			Mean	Residuals	μ	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	Δm	.01m	.01m	%
0.31	-0.22	53	1.64	1.15	49	1.96	1.49	47	2.96	2.52	44	.48	5, 1, 1, 4	3.3	.36
0.05	-0.25	30	1.35	1.15	20	1.70	1.49	21	2.70	2.48	22	.23	7, 3, 2, 1	4	.19
0.31	-0.25	56	1.72	1.14	58	2.13	1.50	63	3.00	2.48	52	.57	1, 1, 6, 5	4	.41
0.05	-0.27	32	1.36	1.13	23	1.66	1.49	17	2.70	2.46	24	.24	8, 1, 7, 0	5.3	.20
0.09	-0.27	36	1.46	1.13	33	1.90	1.49	41	2.78	2.46	32	.36	0, 3, 5, 4	3.6	.28
—	—	—	1.25	1.13	12	1.62	1.48	14	2.65	2.46	19	.15	3, 1, 4	3	.13
0.20	-0.27	47	1.48	1.13	35	1.82	1.48	34	2.79	2.46	33	.37	10, 2, 3, 4	5.6	.29
0.31	-0.27	58	1.75	1.13	62	2.01	1.48	53	3.07	2.46	61	.58	0, 4, 5, 3	3.6	.41
0.42	-0.28	70	1.94	1.11	83	2.10	1.48	62	2.98	2.45	53	.67	3, 16, 5, 14	11.0	.46
-0.02	-0.28	26	1.41	1.10	31	1.75	1.47	28	2.79	2.45	34	.30	4, 1, 2, 4	3	.24
0.17	-0.28	45	1.61	1.09	52	1.85	1.47	38	2.90	2.45	45	.45	0, 7, 7, 0	5	.34
0.30	-0.28	58	1.68	1.08	60	2.00	1.46	54	3.00	2.44	56	.57	1, 3, 3, 1	2.2	.41
-0.07	-0.28	21	1.34	1.08	26	1.63	1.46	17	2.70	2.44	26	.22	1, 5, 5, 4	3.8	.18
0.12	-0.28	40	1.48	1.08	40	1.89	1.45	44	2.85	2.44	41	.41	1, 1, 3, 0	1.7	.31
0.17	-0.28	45	1.64	1.08	46	1.97	1.44	53	2.87	2.43	44	.47	2, 1, 6, 3	3.6	.35
0.23	-0.28	51	1.75	1.08	67	1.96	1.44	52	2.95	2.42	53	.56	5, 11, 4, 3	6.5	.40
-0.02	-0.30	28	1.44	1.08	36	1.75	1.43	32	2.83	2.42	41	.34	6, 2, 2, 7	4.7	.27
-0.10	-0.30	20	1.33	1.07	26	1.74	1.43	31	2.67	2.42	25	.26	6, 0, 5, 1	4	.21
-0.10	-0.30	20	1.44	1.07	37	1.76	1.43	33	2.78	2.40	38	.32	12, 7, 1, 6	7.6	.26
0.01	-0.30	31	1.48	1.07	41	1.79	1.43	36	2.80	2.40	40	.37	6, 4, 1, 3	4	.29
0.30	-0.37	67	1.82	1.07	75	2.00	1.42	58	2.91	2.39	52	.63	4, 12, 5, 11	8.7	.44
-0.07	-0.37	30	1.41	1.07	34	1.76	1.42	34	2.75	2.36	39	.34	4, 0, 0, 5	3.1	.27
0.01	-0.37	38	1.46	1.05	41	1.86	1.42	44	2.82	2.36	46	.42	4, 1, 2, 4	3	.32
-0.02	-0.37	35	1.41	1.05	36	1.74	1.42	32	2.63	2.36	27	.32	3, 4, 0, 5	3.6	.26
-0.02	-0.40	38	1.46	1.05	41	1.76	1.42	34	2.73	2.36	37	.38	0, 3, 4, 1	2.6	.30
-0.15	-0.40	25	1.54	1.05	49	1.65	1.41	24	2.78	2.36	42	.35	10, 14, 11, 7	11.9	.28
0.07	-0.43	50	1.54	1.05	49	1.88	1.41	47	2.70	2.36	34	.45	5, 4, 2, 11	6.4	.34
-0.27	-0.43	16	1.48	1.05	33	1.67	1.41	26	2.53	2.35	18	.23	7, 10, 3, 5	6.7	.19
-0.07	-0.43	36	1.44	1.05	39	1.76	1.39	37	2.73	2.35	38	.38	2, 1, 1, 0	1.4	.30
-0.15	-0.43	28	1.48	1.05	35	1.78	1.39	37	2.78	2.35	43	.37	8, 3, 4, 7	6.1	.29

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Measures

		Aperture 1		Aperture 3		Aperture 5		Aperture 7		a
		m	m+m	m	m+m	m	m+m	m	m+m	[illegible]
151	4495	29.9	30.6	17.0	20.2	11.7	14.7	3.6	7.1	-0.
152	4501	29.9	30.6	17.0	20.3	11.7	14.8	3.6	7.1	-0.
153	4508	30.2	30.6	18.2	20.5	—	—	4.9	7.2	-0.
154	4515	30.1	30.6	18.1	20.5	12.0	14.8	4.9	7.2	-0.
155	-	29.9	30.6	17.5	20.6	11.1	14.9	3.6	7.2	-0.
156	4528	29.6	30.6	16.3	20.7	11.0	15.0	3.0	7.2	-0.
157	4534	— ?	— ?	16.3	20.8	10.2	15.0	3.1	7.2	-
158	4541	30.0	30.7	18.9	20.9	12.2	15.1	4.9	7.2	-0.
159	4584	30.0	30.7	18.4	20.9	12.2	15.2	4.9	7.2	-0.
160	4550	29.6	30.7	16.1	20.9	11.1	15.2	3.7	7.3	-0.
161	4554	29.4	30.7	15.1	20.9	10.1	15.3	3.2	7.3	-0.
162		—	—	19.0	20.9	13.9	15.4	6.6	7.3	-
163		30.3	30.6	—	—	—	—	—	—	-0.
164	4564	29.8	30.7	17.5	20.9	12.0	15.4	4.0	7.3	-0.
165	4572	30.0	30.7	18.0	20.9	12.0	15.5	5.1	7.3	-0.
166	4576	—	—	19.3	20.9	14.0	15.6	6.0	7.3	-
167	4581	30.0	30.9	18.2	20.9	11.7	15.7	6.1	7.3	-0.
168	4584	29.1	30.8	16.4	20.9	10.1	15.7	3.0	7.3	-0.
169	4616	29.0	30.6	17.5	20.9	10.9	15.2	3.7	7.1	-0.
170	4635	29.0	30.0	19.0	20.9	12.1	15.0	3.7	6.2	-0.
171	4646	29.2	29.8	18.0	20.9	11.2	14.9	3.5	6.1	-0.
172	4666	29.0	29.8	19.0	20.9	11.6	14.6	1.4	6.0	-0.
173		—	—	—	—	—	—	—	—	-
174		—	—	—	—	—	—	—	—	-
175		—	—	—	—	—	—	—	—	-
176		—	—	—	—	—	—	—	—	
177	4765	28.0	29.1	17.0	20.4	10.0	14.4	1.6	5.3	0.1
178	4805	27.7	28.5	17.9	19.5	~~9.5~~	~~12.4~~	2.2	4.9	0.2
179	4810	27.6	28.4	17.0	19.1	—	—	1.5	4.8	0.2
180	4824	27.0	28.3	16.[illegible]	18.7	9.5	12.4	[illegible]	4.5	0.3

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Reductions

Aperture 1			Aperture 3			Aperture 5			Aperture 7			Mean	Residuals .01m	μ .01m	dl
[n]	[m-n]	Δm	[n]	[m-n]	Δm	[n]	[m-n]	Δm	[n]	[m-n]	Δm	Δm			
-0.25	-0.43	18	1.36	1.05	31	1.60	1.38	22	2.72	2.34	38	.27	9,4,5,11	7.8	.30
-0.25	-0.43	18	1.36	1.04	32	1.60	1.37	23	2.72	2.34	38	.28	10,4,5,10	7.7	.23
-0.27	-0.43	16	1.24	1.02	22	—	—	—	2.57	2.33	24	.21	5,1,3	3.4	.18
-0.30	-0.43	13	1.25	1.02	23	1.58	1.37	21	2.57	2.33	24	.20	7,3,1,4	4.3	.17
-0.25	-0.43	18	1.31	1.01	30	1.65	1.36	29	2.72	2.33	39	.29	11,1,0,10	7.4	.23
-0.17	-0.43	26	1.41	1.00	41	1.66	1.35	31	2.86	2.33	47	.34	10,5,5,11	8.2	.28
—	—	—	1.41	0.99	42	1.68	1.35	33	2.78	2.33	45	.40	2,7,5	5.0	.31
-0.26	-0.46	20	1.18	0.98	20	1.57	1.34	23	2.57	2.33	24	.22	2,2,1,2	1.7	.18
-0.26	-0.46	20	1.23	0.98	25	1.57	1.33	24	2.57	2.33	24	.23	3,2,1,1	2	.19
-0.17	-0.46	29	1.44	0.98	46	1.65	1.33	32	2.70	2.32	38	.36	7,10,4,2	6.4	.28
-0.12	-0.46	34	1.54	0.98	56	1.74	1.32	42	2.76	2.32	34	.42	8,14,0,8	9	.32
—	—	—	1.17	0.98	19	1.43	1.32	11	2.49	2.32	17	.12	7,1,5 6	5.2	.11
-0.37	-0.43	06	—	—	—	—	—	—	—	—	—	—	—	—	—
-0.24	-0.46	12	1.31	0.98	33	1.58	1.32	26	2.62	2.32	30	.25	13,8,1,5	8.0	.21
-0.26	-0.46	20	1.27	0.98	29	1.58	1.31	27	2.55	2.32	23	.25	5,4,2,2	3.4	.21
—	—	—	1.10	0.98	12	1.42	1.30	12	2.45	2.32	13	.12	0,0,1	.57	.11
-0.26	-0.52	26	1.24	0.98	26	1.60	1.29	31	2.44	2.32	12	.24	2,2,7,12	7.0	.20
-0.05	-0.49	44	1.41	0.98	43	1.74	1.29	45	2.80	2.32	48	.45	1,2,0,3	2	.34
-0.12	-0.43	21	1.32	0.98	33	1.66	1.33	33	2.70	2.34	36	.31	10	3.1	.25
-0.02	-0.27	25	1.17	0.98	19	1.57	1.35	22	2.70	2.43	27	.24	1,5,2,3	3.1	.20
-0.07	-0.22	15	1.26	0.98	28	1.64	1.36	28	2.73	2.44	29	.25	10,3,3,4	5.8	.21
-0.02	-0.22	20	1.17	0.98	19	1.60	1.33	27	3.00	2.45	[55]	.22	2,3,5	3.6	.18
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-0.17	-0.05	22	1.36	1.03	33	1.75	1.30	45	2.96	2.53	[43]	.33	11,0,12	9.3	.26
0.28	+0.09	13	1.26	1.14	12	—	—	—	2.88 2.97	2.56	[32]	.12	1,0	.22	.11
0.23	0.10	13	1.36	1.17 1.22	19	—	—	—	2.98	2.57	[41]	.16	3,3	3	.14
0.31	0.11	20	1.45	1.20	25	1.78	1.55	24	3.07	2.66	[39]	.23	3,3,4	2.2	.19

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Measures

		Aperture 1		Aperture 3		Aperture 5		Aperture 7		G
		n	m+w	n	m+w	n	m+w	n	m+w	[n]
181	4848	26.0	27.2	14.5	17.7	7.7	11.3	-1.8	4.1	0.4
182	4854	24.0	27.0	13.0	17.3	6.1	11.1	-1.2	4.0	0.6
183	4861	20.0	26.8	9.9	17.1	3.2	10.8	-2.5	3.9	0.9
184		24.0	26.2	14.0	16.9	6.1	10.1	-0.2	3.8	0.6
185		24.7	26.0	15.6	16.7	7.7	9.9	0.6	3.8	0.5
186		23.6	25.8	13.8	16.3	6.9	9.6	0.2	3.8	0.4
187		23.6	25.4	13.2	16.0	6.1	9.1	-	-	0.4
188		23.9	25.2	13.4	15.6	6.2	8.9	-	-	0.6
189		23.9	25.0	14.4	15.5	7.0	8.7	-	-	0.6
190		23.0	24.5	12.3	15.2	6.0	8.2	-	-	0.7
191		20.5	23.5	10.6	14.7	4.0	7.6	-	-	0.9
192		20.0	23.2	11.0	14.5	4.0	7.5	-	-	0.9
193		-	-	-	-	-	-	-	-	-
194		-	-	-	-	-	-	-	-	-
196		-	-	~~12.3~~	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	~~1.6~~
200		19.1	20.7	10.0	11.9	2.9	6.0	-	-	1.0
		-	-	-	-	-	-	-	-	~~1.4~~
207		14.2	18.4	7.2	10.1	2.3	5.1	-	-	1.4

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Reductions

Aperture 1			Aperture 3			Aperture 5			Aperture 7			Mean	Residuals	μ	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	Δm	.01 m	.01 m	%
0.44	0.29	15	1.59	1.29	30	1.94	1.63	31	?	2.65	?	.25	10, 5, 6	7.3	.21
0.64	0.31	33	1.74	1.32	42	2.04	1.65	39	?	2.72	?	.38	5, 4, 1	3.7	.30
0.98	0.33	65	2.05	1.35	70	2.37 2.04	1.67	70	?	2.73	?	.68	3, 2, 2	2.4	.47
0.64	0.41	23	1.64	1.37	27	2.04	1.74	30	3.25	2.74	[51]	.27	4, 0, 3	2.8	.22
0.58	0.44	14	1.47	1.39	08	1.94	1.76	18	3.12	2.74	[38]	.13	1, 5, 5	4.1	.11
0.68	0.45	23	1.66	1.42	24	2.01	1.78	23	3.18	2.74	[44]	.23	0, 1, 0	.57	.19
0.68	0.51	17	1.73	1.45	18	2.04	1.82	22	—	—	—	.19	2, 1, 3	2.2	.16
0.65	0.53	12	1.70	1.49	21	2.06	1.84	22	—	—	—	.18	6, 3, 4	4.4	.15
0.65	0.54	11	1.60	1.50	10	2.06 ~~2.18~~	1.85	15	—	—	—	.12	1, 2, 3	2.2	.11
0.74	0.59	15	1.81	1.53	28	2.18	1.90	28	—	—	—	.24	9, 4, 4	6.1	.20
0.94	0.69	25	1.99	1.57	42	2.29	1.94	35	—	—	—	.34	9, 8, 1	7	.27
0.98	0.73	25	1.94	1.59	35	2.29	1.95	34	—	—	—	.31	6, 4, 3	4.4	.25
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
~~1.05~~															
1.05	0.92	13	2.04	1.85	19	2.40	2.09	31	—	—	—	.21	8, 2, 10	7.4	.25
~~1.47~~	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1.41	1.10	31	2.32	2.03	29	2.47	2.18	29	—	—	—	.30	1, 1, 1	1	.24

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Comparison of γ Cyg and δ CMa.

	γ Cyg C18482	δ CMa (HR. 28)	Diff (δ-γ)
Hβ	.68	.61	-.07
Hγ	1.06	1.12	+.06
Hδ	.77	.86	+.09
H_2	1.58	2.25?	-
K	1.44	2.25?	-
4227	.62	.70	+.08
4215	.48	.51	+.03

Very similar intensities and spectra
Seems probable that δ CMa has too great central intensity for H and K

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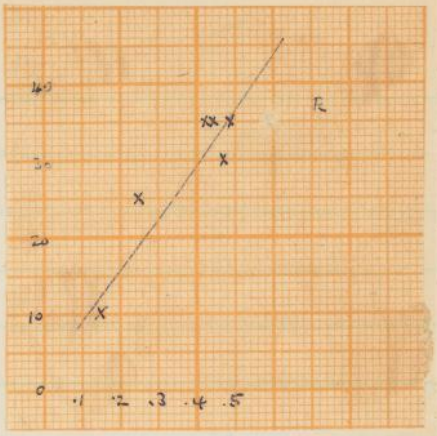
Central intensities of series lines in γ Cyg

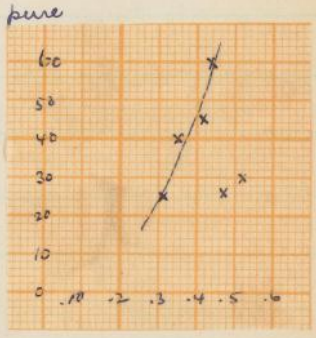
Line	Series	E.P.	Int.	dl	Δm	
Iron 4489.74			3	.29	37	pure
4482.18			4	.30	.38	pure
4461.65			8	.28	.35	pure
4445.43			(1)	-	-	-
4427.31			10	.21	.26	Mg
4375.93			9	.41	.58	Sc+, Y+
4347.44			(1)	.14	? .23	~~pure~~ Mg, Cr, Ti
4291.47			4	-	-	
4258.38			2	.25	.31	
4232.72			1	.36	.48	
4216.18			8	.36	.48	Sr+
4206.70			3	-	-	
4199.98			1	-	-	
4134.34			(1)	-	-	
4239.85			2	.26	.33	
4177.60			4	.46	.66	
4152.18			4	-	-	
4139.93			2	.17	.20	
4100.75			3	-	-	in H line
4092.51			(1)	.10	.11	
4415.13			20	.35	.47	Sc+
4404.75			30	.18	.22	pure (some V)
4383.55			45r	.46	.67	~~pure~~ (some V) Fe+
4367.91			2	.29	.37	Ti+
4337.05			10	.50	.75	Ti+
4294.13			15	.30	.38	
4229.75			(1)	-	-	
4222.47						

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	Series	Int	dl	Δw	
4325.77		35	.36	.49	
4307.91		35	.32	.42	
4271.76		35	.33	.44	
4250.79		25	.21	.25	
4202.03		30	.35	.47	V, Fe
4147.68		10	.15	.17	
4143.87		30	.38	.52	pure
4132.06		25	.35	.47	(V) effectively pure
4071.75		40	.28	.35	pure
4063.60		45	.32	.41	
4045.82		60r	.33	.43	
4005.25		25	.25	.31	
3969.26		30	–	–	Ca + line
4494.57		12	.22	.27	
4482.26		6	.30	.38	
4459.13		10	.30	.38	
4447.73		9	.27	? .34	
4442.35		12	–	–	
4430.62		6	.26	.32	
4408.42		6	.32	.41	
4407.72		5			
4352.74		9	.41	.57	
4315.09		10	.42	.59	
4282.41		12	.19	.23	





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				dl	Δw	
4299.25			18			
4271.17			20			
4260.49			35			
4250.13			25			
4235.95			25			
4233.61			18			
4222.23			12			
4210.36			15			
4198.31			20			
4191.45			15			
4187.81			20			
4187.05			20			
Ionized Iron						
4369.41	$2^4P-1^4F'$	2.68	..	-	-	
4296.56			6	.25	.31	
4258.16			..	.25	.31	pure
4178.87			6	.46	.66	
4416.81	$2^4P-1^4D'$	2.68	4	.40	.56	
4385.39			..	.44	.67	
4357.77			6	.41	.57	
4303.18			4	-	-	
4233.16			8	.36	.48	
4173.48			6	.46	.66	
4128.74			..	.39	.54	

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Ionized Iron.		E.P.	int	lb	Δ w	
4666.75	$2^4F - 1^4F'$	2.82	..	.18	.22	
4629.33			4	..	..	
4582.84			..	.20	.24	
4555.90			6	.32	.42	(Ba+)
4534.17			..	.31	.40	
4520.24			6	.23	? .29	
4515.33			6	.17	.20	
4491.41			4	.29	.37	
4489.21			4			
4472.93			..	.19	.23	
4620.52	$2^4F - 1^4D'$	2.82	..	–	–	
4583.84			8	.34	.45	
4576.31			4	.11	.12	
4549.48			4	.28	.36	
4541.52			..	.18	.22	
4522.64			6	–	–	
4508.29			8	.18	.21	
5169.03	$1^0S - 1^6P'$	2.88	8			
5018.44			8			
4923.92			10			

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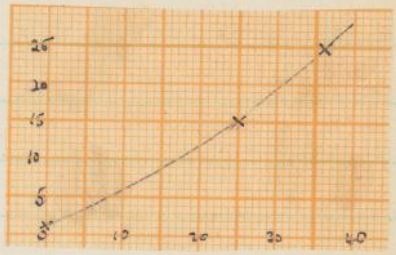
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Ionized Titanium		E.P.	Int	dl	Δm	
4450.49	$1^2D - 1^2F'$	1.08	4	.27	.34	
4443.80			25	.44	.63	
4395.04			25	.34	.45	
4344.31			3	.36	.48	
4337.92			10	.50	.75	
4294.10			8	.30	.38	
4287.88			2	.32	.41	
4501.27	$1^2G - 1^2F'$	1.12	25	.18	.21	
4468.49			25	.19	.23 ~~.45~~	
4341.39	$(1^2G - 1^2D')$		2			# line
3913.45	$1^2G - 1^2G'$		40	-	-	
3900.53			50	-	-	
4417.71	$(1^4P - 1^2D)$	1.16	8	.40	.56	
4330.71	$1^4P - 1^4D'$	1.16	1	.26	.33	
4320.95			1	.24	.30	
4314.98			5	.42	.59	
4312.88			7		~~#2~~	
4307.89			12	.32	.42	
4301.93			5			
4300.05			12	.41	.58	
4290.23			8	.41	.57	
4708.65	$(1^2P - 1^2F')$	1.22	(2)	-	-	
4589.96			3	-	-	
4563.77	$1^2P - 1^2D'$		15	.21	.25	
4533.97			20	.31	.40	
4399.77	$(1^2P - 1^4D')$		6	.41	.57	
4314.84			2	.34	.45	

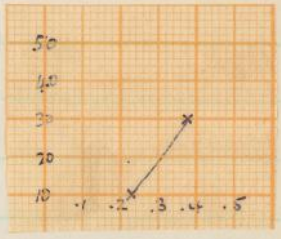
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Ionized Titanium	Series	E.P.	Int.	dl	Δm
4571.98	$1^2H - 1^2G'$	1.57	15	.21	.25
4549.64			25	.28	.36
4529.46			1	-	-
4053.84	$2^2G - 2^2F'$	1.88	4	.33	.43
4028.55			5	.33	.43



Ionized Yttrium					
4422.60	$1^3D - 1^3P'$	0.0	10	.27	.34
4398.03			15	.41	?.57
4358.72			8	.28	.36
4309.61			20	.32	.42
4235.71			6	.28	.36
4199.28			3	-	-
4900.11	$1^3F - 1^3D'$	0.93	30		
4883.69			50		
4854.88			30	30	.38
4823.32			10	.19	.23
4786.57			5	.11	<.12

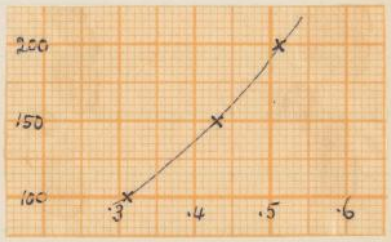


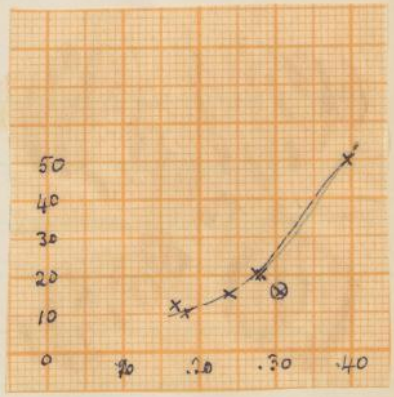
Ionized Scandium					
4431.35	$1^3F - 1^3F'$	0.60	4	.25	.31
4420.66			1	-	-
4415.55			40	.35	.47
4400.38			50	.41	.57
4384.50			8	.46	.67
4374.46			60	.41	.58
4354.60			8	.20	.24

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Sc+	Series	E.P.	Int.	Δλ	Δm	
4325.00	$^{3}F - {}^{3}D'$	0.60	50	.36	.49	
4320.73			75	.24	.30	
4314.09			100	.42	.59	
4305.71			10	.30	.89	
4294.77			10	.30	.38	
Manganese						
4034.49	$^{6}S - {}^{6}P$	0.0	100R	.25	.31	
4033.07			150R	.33	.43	
4030.76			200R	.38	.51	
4083.64	$^{6}D - {}^{6}D'$		12	.15	.17	Mn
4082.95		2.16	12			Mn
4079.43			10	—	-	Mn
4079.74			12	—	-	Mn
4058.94			10	.16	.19	Mn, (Ti)
4055.55			20	.23	.28	Ti, Mn, equal
4048.76			15	.20	.24	Mn
4041.37			50R	.30	.39	Mn
4035.73			15	.25	.31	See above
4018.11			20	.22	.27	Mn





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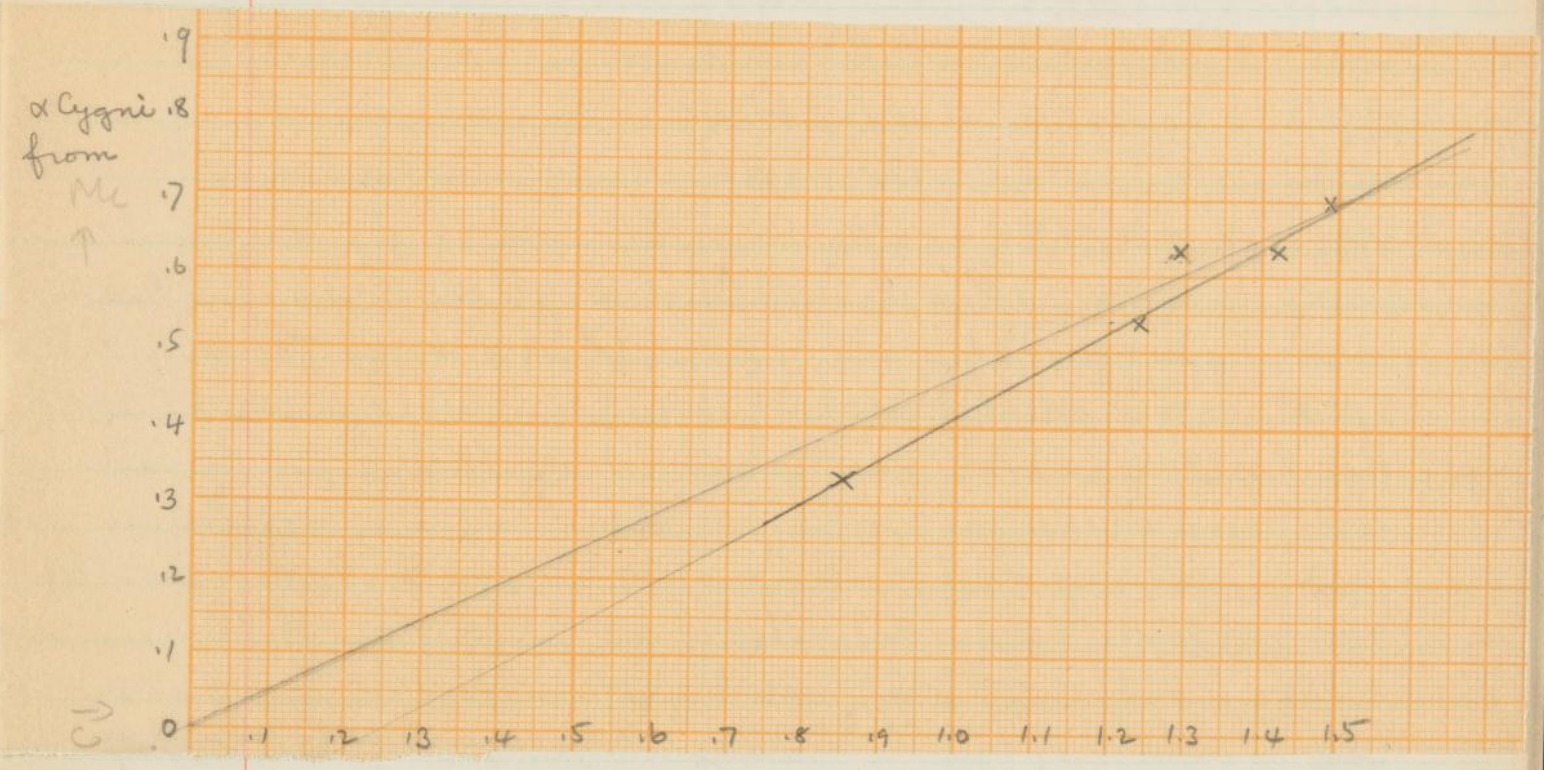
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Measures

21 Cygni . small slit . C 18483

No.	Line	Slit.	Aperture 1		Aperture 3		Aperture 5		Aperture 7		A
			n	m tn	n	m tn	n	m tn	n	m tn	[n]
1	3835		3.5	17.0	2.0	8.9	1.1	5.1	-	-	1.3
2	3846		17.0	18.9	7.6	10.2	-	-	-	-	2.6
3	3850		17.0	19.9	7.7	10.9	-	-	-	-	2.6
4	3854		17.9	20.3	7.6	11.5	-	-	-	-	2.7
5	3858		15.5	21.0	5.9	12.0	-	-	-	-	2.5
6	3863		16.5	22.0	8.4	12.9	-	-	-	-	2.6
7	3866		22.9	22.5	11.0	13.2	-	-	-	-	2.9
8	3873		21.0	24.8	11.1	14.2	-	-	-	-	2.9
9	3878		22.5	24.7	12.5	15.0	-	-	-	-	3.1
10	3889		10.2	26.1	5.0	15.4	0.8	8.8	-	-	2.12
11	3900		23.7	27.4	7.1	19.3	5.2	9.5	1.0	5.2	3.2
12	3903		26.1	27.8	-	-	7.5	9.6	-	-	3.3
13	3905-6		25.3	28.0	-	-	6.3	10.0	1.1	5.2	3.3
14	3912		24.9	29.0	-	-	7.1	10.6	2.1	5.7	3.2
15	3933		18.6	31.4	-	-	2.6	12.2	0.0	6.4	2.8
16	3938		29.2	31.8	-	-	10.6	12.9	1.4	6.8	3.6
17	3968		15.4	34.3	9.7	25.6	1.3	15.1	-0.9	7.5	2.5
18	3970		14.2	34.4	8.5	26.0	1.9	15.1	-0.2	7.6	2.4
19	~~3973~~ 4012		31.9	34.5	23.3	26.0	11.4	15.3	4.0	7.7	3.8
20	4003		34.2	35.9	24.0	26.5	-	-	-	-	4.0
21	4005		31.1	36.0	24.6	26.6	-	-	-	-	3.7
22	4010		35.0	36.0	24.7	26.6	-	-	-	-	4.0
23	4015		35.0	36.0	24.2	26.7	-	-	-	-	4.0
24	4024		34.6	37.0	24.1?	26.9?	15.6	18.9	-	-	4.0
25	4025		35.9	37.1	25.0?	26.9?	15.6	18.9	-	-	4.1
26	4030		36.0	37.1	25.6?	27.0?	15.2	18.9	-	-	4.1
27	4033		36.1	37.1	26.0?	27.1?	-	-	-	-	4.1
28	4063		36.0	37.5	25.0	27.2	-	-	-	-	4.1
29	4067-71		36.2	37.5	26.0	27.6	-	-	-	-	4.1

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Reductions

Aperture 1			Aperture 3			Aperture 5			Aperture 7			Mean	Residuals	μ	dl
[n]	[mtn]		[n]	[mtn]		[n]	[mtn]		[n]	[mtn]					
1.34	2.67	1.33 ~~1.03~~	1.03 ~~2.00~~	2.00	1.07	0.77	1.60	.83	–	–	–	1.08	25, 1, 25	20.4	.63
2.68	2.83	15	1.87	2.13	.26	–	–	–	–	–	–	.90	5, 6	5.5	.17
2.68	2.90	22	1.88	2.20	32	–	–	–	–	–	–	.27	5, 5	5	.22
2.75	2.94	19	1.87	2.25	38	–	–	–	–	–	–	.28	9, 10	9.5	.23
2.57	3.00	43	1.67	2.30	63	–	–	–	–	–	–	.53	10, 10	10	.39
2.64	3.07	43	1.95	2.36	41	–	–	–	–	–	–	.42	1, 1	1	.32
2.98	3.10	12	2.20	2.39	19	–	–	–	–	–	–	16	4, 5	4.5	.14
2.99	3.22	23	2.21	2.47	26	–	–	–	–	–	–	24	1, 2	1.7	.20
3.10	3.27	17	2.33	2.54	21	–	–	–	–	–	–	19	2, 2	2	.16
2.125	3.30	1.28	1.65	2.69	1.03	0.72	2.00	1.28	–	–	–	1.20	8, 17, 8	11.7	.67
3.20	3.49	29	1.81	2.87	1.06	1.60	2.50	.90	0.75	1.62	.87	.78	49, 28, 12, 9	29.2	.51
3.39	3.53	24	–	–	–	1.86	2.08	32	–	–	–	28	4, 4	4	.23
3.33	3.54	21	–	–	–	1.74	2.10	36	0.77	1.60	[83]	29	8, 8	8	.23
3.29	3.60	.31	–	–	–	1.81	2.21	.40	1.10	1.65	.55	42	11, 2, 13	9.9	.32
2.82	3.82	1.00	–	–	–	1.18	2.28	1.10	0.60	1.74	1.24	1.11	11, 1, 13	9.8	.64
3.63	3.83	20	–	–	–	2.16	2.36	20	0.90	1.78	[88]	20	0, 0	0	.17
2.58	4.05	1.47	2.07	3.32	1.25	0.80	2.57	1.67	0.35	1.85	1.50	1.47	0, 22, 20, 3	14.9	.74
2.47	4.03	1.56	1.96	3.38	1.42	1.00	2.55	1.55	0.44	1.88	1.44	1.49	7, 7, 6, 5	6.3	.75
3.84	4.04	220	3.17	3.38	.21	2.24	2.57	33	1.42	1.88	46	.30	10, 9, 3, 16	10.6	.24
4.03	4.14	11	3.22	3.42	20	–	–	–	–	–	–	16	5, 4	4.6	.14
3.77	4.15	38	3.27	3.43	16	–	–	–	–	–	–	27	11, 11	11	.22
4.08	4.15	07	3.27	3.43	16	–	–	–	–	–	–	12	5, 4	4.6	.11
4.08	4.15	07	3.24	3.44	20	–	–	–	–	–	–	14	7, 6	6.5	.12
4.05	4.23	18	3.23	3.45	22	2.54	2.83	25	–	–	–	22	4, 0, 3	2.8	.18
4.14	4.24	10	3.31	3.45	14	2.58	2.83	25	–	–	–	16	6, 2, 9	6.3	.14
4.15	4.24	09	3.35	3.46	11	2.55	2.83	28	–	–	–	16	7, 5, 12	8.5	.14
4.16	4.24	08	3.37	3.46	09	–	–	–	–	–	–	8	0, 1	.22	.07
4.15	4.27	12	3.31	3.47	16	–	–	–	–	–	–	14	2, 2	2	.13
4.17	4.27	10	3.32	3.51	19	–	–	–	–	–	–	12	2, 2	2	.11

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Measures

No.	Leiæ.	Rr.	Aperture 1		Aperture 3		Aperture 5		Aperture 7	
30	4077		36.1	37.5	26.3	27.6	–	–	–	–
31	4101		21.4	38.1	9.3	27.9	3.0	18.6	0.9	10.2
32	4122		37.0	38.0	26.0	28.0	16.7	19.1	7.0	10.2
33	4128		35.4	38.2	23.6	27.9	14.0	19.1	4.9	10.3
34	4131		35.4	38.2	24.2	27.9	15.2	19.1	7.0	10.3
35	4167		36.6	38.7	26.3	27.9	16.4	19.9	–	–
36	4173-4		34.1	38.7	22.3	27.9	14.0	19.9	5.4	10.4
37	4179		34.0	38.6	20.1	27.8	13.0	20.0	4.9	10.6
38	4233		33.9	39.0	21.0	27.4	15.7	20.9	4.5	10.5
39	4242		37.8	39.1	25.0	27.7	–	–	8.0	11.4
40	4249		37.7	39.1	25.5	27.6	–	–	7.0	11.6
41	4258		37.9	39.2	26.0	27.7	–	–	–	–
42	4262		38.0	39.2	26.2	28.0	–	–	–	–
43			38.7	39.3	26.4	28.2	19.5	21.4	–	–
44			38.6	39.3	26.5	28.2	19.0	21.5	–	–
45			37.8	39.3	26.1	28.2	18.8	21.7	–	–
46			38.0	39.3	25.3	28.3	18.8	21.7	–	–
47			37.9	39.3	25.3	28.3	19.0	21.8	–	–
48			38.0	39.5	25.0	28.3	18.4	21.9	–	–
49	4302		37.0	39.6	23.9	28.4	16.2	21.9	–	–
50	4308		38.1	39.5	26.7	28.4	19.0	21.9	–	–
51	4315		37.1	39.6	25.8	28.5	17.9	21.9	–	–
52	4321		38.1	39.5	27.4	28.8	19.8	22.0	–	–
53	4326		38.1	39.5	26.7	28.9	20.0	22.1	–	–
54	4340		25.9	40.2	11.8	29.0	6.2	22.2	1.8	12.5
55	4352		37.0	40.2	24.0	29.1	16.5	22.3	7.0	12.6
56	4385		37.4	40.8	25.5	29.9	17.6	22.9	7.6	12.9
57	4390		40.0	40.9	[illegible]	30.0	20.9	22.9	10.1	13.0
58	4395		38.3	40.9	26.8	30.0	18.3	22.9	12.6	13.1
59	4400		39.9	40.9	27.8	30.0	20.8	23.0	10.1	13.1
60	4405		40.2	40.9	28.9	30.1	21.6	23.1	–	–

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Aperture 1 [in]	Aperture 1 [mtn]		Aperture 3 [in]	Aperture 3 [mtn]		Aperture 5 [in]	Aperture 5 [mtn]		Aperture 7 [in]	Aperture 7 [mtn]		Mean	Residuals	μ	dl
4.16	4.27	11	3.10	3.50	40	—	—	—	—	—	—	.26	15, 14	14.5	.21
3.03	4.31	128	2.05	3.53	1.48	12.5	2.81	1.56	0.70	2.14	144	1.42	14, 6, 14, 2	10.4	.73
4.23	4.31	.08	3.38	3.54	16	2.65	2.85	20	1.80	2.14	34	.20	12, 4, 0, 14	9.4	.17
4.11	4.32	21	3.17	3.53	36	2.45	2.85	40	1.55	2.15	60	.39	18, 3, 1, 21	13.9	.30
4.11	4.32	21	3.24	3.53	29	2.55	2.85	30	1.80	2.15	35	.29	8, 0, 1, 6	5	.23
4.20	4.36	16	3.40	3.53	13	2.62	2.90	28	—	—	—	.19	3, 6, 9	6.5	.14
4.01	4.36	35	3.08	3.53	45	2.45	2.90	45	1.66	2.16	50	.42	7, 3, 3, 8	5.7	.32
4.00	4.35	35	2.92	3.53	61	2.37	2.91	54	1.55	2.16	61	.53	18, 8, 1, 8	10.6	.39
3.99	4.39	40	3.00	3.49	49	2.58	2.99	41	1.50	2.16	66	.49	9, 0, 8, 17	10.4	.36
4.28	4.39	11	3.31	3.52	21	—	—	—	1.92	2.24	32	.21	10, 0, 11	8.6	.18
4.29	4.39	10	3.34	3.51	17	—	—	—	1.81	2.26	[45]	.14	4, 3	3.6	.12
4.30	4.40	10	3.37	3.52	15	—	—	—	—	—	—	.12	2, 3	2.6	.11
4.36	4.40	04	3.39	3.54	15	—	—	—	—	—	—	.09	5, 6	5.5	.08
4.35	4.41	06	3.41	3.56	15	2.87	3.02	15	—	—	—	.12	6, 3, 3	4.2	.11
4.29	4.41	12	3.42	3.56	14	2.84	3.03	19	—	—	—	.15	3, 1, 4	3	.13
4.33	4.41	13	3.37	3.56	19	2.82	3.04	22	—	—	—	.18	5, 1, 4	3.7	.15
4.30	4.41	05	3.33	3.56	23	2.82	3.04	22	—	—	—	.17	12, 6, 5	8.2	.15
4.36	4.41	11	3.33	3.52	23	2.84	3.04	24	—	—	—	.19	8, 4, 5	5.9	.16
4.33	4.42	06	3.31	3.56	15	2.79	3.05	26	—	—	—	.16	10, 1, 10	8.2	.14
4.24 / 4.33	4.43	19 / 11	3.21	3.57	36	2.62	3.05	43	—	—	—	.33	14, 3, 10	10.1	.26
4.32 / 4.24	4.42	10 / 18	3.43	3.57	14	2.84	3.05	21	—	—	—	.15	5, 1, 6	4.6	.13
4.24 / 4.33	4.43	19 / 11	3.37	3.54	21	2.75	3.05	30	—	—	—	.23	4, 2, 7	4.8	.19
4.32 / 4.32	4.42	10 / 10	3.49	3.58	09	2.89	3.06	17	—	—	—	.12	2, 3, 5	3.6	.11
4.32 / 3.37	4.42	10 / 05	3.43	3.60	17	2.92	3.07	15	—	—	—	.14	4, 3, 1	3	.12
3.37 / 4.32	4.50	1.13 / 27	2.28	3.60	1.32	1.72	3.08	1.36	0.96	2.34	1.38	1.29	16, 3, 7, 9	9.9	.70
4.26	4.50	18	3.23	3.61	38	2.64	3.09	45	1.81	2.34	53	.38	20, 0, 7, 15	13	.30
4.47	4.53	27	3.34	3.67	33	2.73	3.13	40	1.87	2.37	50	.38	11, 5, 2, 12	8.6	.30
4.33	4.54	07	3.56	3.69	13	2.98	3.13	15	2.11	2.37	26	.15	8, 2, 0, 11	6.9	.13
4.46	4.54	21	3.44	3.69	25	2.79	3.13	34	2.33	2.38	05	.21	0, 4, 13, 16	10.5	.18
4.50	4.54	08	3.53	3.69	13	2.99	3.14	15	2.11	2.38	27	.16	8, 3, 1, 11	7	.14
	4.54			3.69			3.15					.11		7	.10

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Measures

No.	Line.	Str.	Aperture 1		Aperture 3		Aperture 5		Aperture 7	
61	4417		38.9	41.0	26.0	30.2	17.9	23.2	7.8	13.1
62	4444		39.9	41.3	28.0	30.7	20.2	23.6	10.0	13.2
63	4450		40.6	41.5	29.1	30.9	20.9	23.8	9.7	13.4
64	4469		40.0	41.6	28.8	31.0	20.1	23.9	8.9	13.5
65	4491		40.4	41.6	30.0	31.1	21.4	23.9	9.5	13.6
66	4482		38.6	41.9	25.1	31.2	17.0	24.0	6.9	13.7
67	4489-91		40.3	41.9	29.4	31.3	21.0	24.0	9.2	13.8
68	4		40.1	41.9	29.0	31.3	21.5	24.0	10.6	13.8
69	4501		41.0	42.1	29.9	31.3	21.4	24.1	10.7	13.9
70	4508		41.1	42.3	28.6	31.4	20.8	24.1	9.1	13.9
71	4515		40.6	42.4	28.9	31.6	21.1	24.2	10.0	13.9
72	4520,22		39.9	42.5	27.9	31.8	20.1	24.5	8.9	13.9
73			41.8	42.6	30.8	31.8	23.2	24.6	—	—
74	4534		41.8	42.6	29.1	31.9	21.9	24.5	—	—
75	4541		40.9	42.4	30.5	31.9	21.7	24.5	—	—
76	4549		39.4	42.5	27.2	32.0	18.8	25.0	9.1	14.7
77	4556		39.9	42.4	27.8	32.0	20.2	24.9	8.1	14.7
78	4558		40.5	42.3	29.0	32.1	21.1	25.0	10.3	14.5
79	4564		41.4	42.3	30.5	32.1	22.5	24.9	11.1	14.5
80	4572-76		41.0	42.3	29.9	32.2	21.9	24.9	10.8	14.2
81			41.5	42.3	30.4	32.2	22.2	24.9	11.0	14.2
82	4584		39.4	42.3	27.0	32.0	18.8	24.9	7.6	14.1
83	4586		40.8	42.3	29.6	32.0	21.6	24.9	10.0	14.0
84	4619		40.9	42.2	29.0	31.5	20.9	24.7	9.8	13.8
85	4629		41.0	42.2	28.9	31.4	20.5	24.4	8.2	13.6
86	4634		41.9	42.2	29.1	31.3	20.4	24.3	10.4	13.5
87	4731		39.4	41.0	27.9	29.5	18.6	21.4	—	—
88	4824		35.7	37.0	23.0	25.1	14.0	16.2	4.4	8.0
89	4836		35.5	36.5	23.1	24.9	—	—	—	—
90	4848		33.5	35.2	20.0	24.1	—	—	—	—

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Reductions

Aperture 1 [n]	Aperture 1 [m+n]		Aperture 3 [n]	Aperture 3 [m+n]		Aperture 5 [n]	Aperture 5 [m+n]		Aperture 7 [n]	Aperture 7 [m+n]		Mean	Residuals	ge	dl
4.37	4.65	28	3.38	3.71	33	2.75	3.19	33	1.90	2.38	48	36	8, 3, 3, 12	7.5	.28
4.46	4.52	06	3.53	3.74	21	2.94	3.19	25	2.11	2.39	28	20	14, 1, 5, 8	8.5	.17
4.47	4.53	04	3.62	3.75	13	2.98	3.21	23	2.08	2.40	32	18	14, 2, 5, 14	10.5	.15
4.52	4.54	11	3.59	3.76	17	2.93	3.21	23	2.00	2.41	41	23	12, 6, 0, 18	11.2	.19
	4.54	06	3.68	3.77	09	3.02	3.21	19	2.06	2.42	36	17	11, 8, 2, 19	11.7	.15
4.35	4.64	29	3.32	~~3.78~~	46	~~2.99~~ 2.68	3.22	54	1.80	2.43	63	48	19, 3, 6, 15	12.5	.36
4.50	4.64	14	3.64	3.79	15	~~3.03~~ 2.99	3.22	23	2.04	2.44	40	23	9, 8, 0, 17	10.4	.19
4.49	4.64	15	3.61	3.79	18	3.03	3.22	19	2.16	2.44	28	20	5, 3, 4, 8	4.9	.17
4.55	4.63	05	3.67	3.79	12	3.02	3.23	21	2.17	2.45	28	16	11, 4, 5, 12	8.7	.14
4.56	4.65	09	3.58	3.80	22	2.98	3.23	25	2.03	2.45	42	24	15, 3, 1, 18	11.8	.20
4.53	4.66	13	3.60	3.81	21	3.00	3.24	24	2.11	2.45	34	23	10, 3, 1, 11	7.5	.19
4.46	4.66	20	3.52	3.84	32	2.93	3.26	33	2.00	2.45	45	32	12, 0, 1, 13	8.9	.26
4.60	4.67	07	3.75	3.85	10	3.16	3.27	11	—	—	—	09	3, 1, 2	1.7	.08
4.60	4.67	07	3.62	3.85	23	3.05	3.26	21	—	—	—	17	10, 6, 4	7.1	.15
4.54	4.66	12	3.74	3.85	11	3.03	3.26	23	—	—	—	15	3, 4, 8	5.5	.13
4.42	4.66	24	3.48	3.86	38	2.82	3.31	49	2.03	2.52	48	40	11, 2, 9	10.7	.31
4.44	4.66	20	3.53	3.86	33	2.94	3.30	36	1.94	2.52	60	37	17, 4, 1, 23	14.4	.29
4.52	4.65	13	3.61	3.86	25	3.00	3.31	31	2.15	2.51	36	26	13, 1, 5, 10	8.6	.21
4.57	4.65	08	3.74	3.86	12	3.10	3.30	20	2.22	2.51	29	18	10, 6, 2, 11	8.0	.15
4.56	4.65	09	3.67	3.87	20	3.05	3.30	25	2.20	2.48	28	20	11, 0, 5, 8	7.3	.17
4.57	4.65	08	3.75	3.87	12	3.08	3.30	22	2.21	2.48	27	17	9, 5, 5, 10	7.6	.15
4.42	4.65	13	3.53	3.86	33	3.03	3.30	27	1.87	2.47	60	33	20, 0, 2, 27	17.0	.26
4.54	4.65	11	3.65	3.86	21	3.03	3.30	27	2.11	2.46	35	24	13, 3, 3, 11	8.5	.20
4.54	4.64	10	3.61	3.80	19	2.98	3.28	30	2.08	2.44	36	24	14, 5, 6, 12	10.7	.20
4.56	4.64	08	3.60	3.79	19	2.97	3.26	29	1.95	2.42	49	26	18, 7, 3, 23	15.1	.21
4.61	4.64	03	3.62	3.79	17	2.95	3.25	30	2.15	2.41	26	19	16, 3, 11, 7	10.4	.16
4.42	4.56	14	3.52	3.65	13	2.80	3.03	23	—	—	—	17	3, 4, 6	4.5	.15
4.13	4.23	10	3.15	3.32	17	2.46	2.62	16	1.44	1.92	[43]	14	4, 3, 2	3.2	.12
4.11	4.19	09	3.15	3.29	14	—	—	—	—	—	—	12	3, 2	2.6	.11
3.96	4.10	14	2.92	3.24	32	—	—	—	—	—	—	23	9, 9	9	.19

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Measures

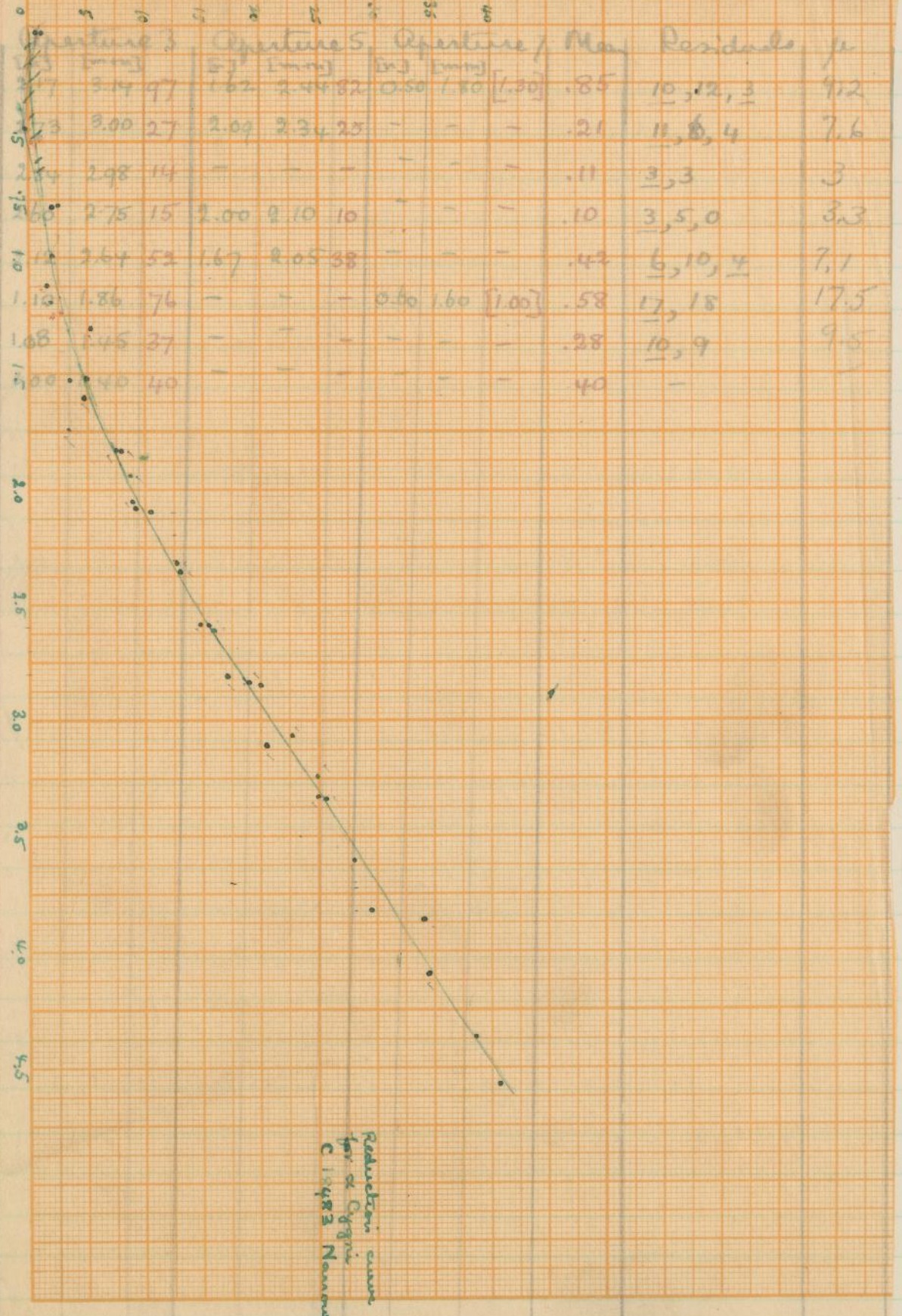
No.	Line.	Str.	Aperture 1		Aperture 3		Aperture 5		Aperture 7	
91	4861		24.7	34.4	10.7 17.6	22.8 21.1	5.5	13.8	0.0	7.0
92			31.8	33.1	~~12.8~~	~~22.9~~	9.8	12.7	–	–
93			31.6	32.7	19.0	20.8	–	–	–	–
94			29.5	30.2	15.9	17.8	8.9	9.9	–	–
95			24.5	29.1	10.1	16.4	5.8	9.3	0.4	5.2
96			11.6	16.9	2.2	7.5	–	–	–	–
97			9.4	11.2	2.1	4.1	–	–	–	–
98			–	–	1.9	3.9	–	–	–	–

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Reductions

Aperture 1 [mm]	[mm]		Aperture 3 [mm]		Aperture 5 [mm]		Aperture 7 [mm]		Mag	Residuals	μ	dl
3.28	4.03	75	3.17	97	1.62	2.44	82	0.50	1.80	[1.30]	.85	10, 12, 3	9.2	.54
3.83	3.93	10	3.73	3.00	27	2.09	2.34	25	–	–	–	.21	11, 6, 4	7.6	.18
3.81	3.88	08	3.74	2.98	14	–	–	–	–	–	–	.11	3, 3	3	.10
3.66	3.72	07	3.60	2.75	15	2.00	2.10	10	–	–	–	.10	3, 5, 0	3.3	.09
3.26	3.62	36	3.12	2.64	52	1.67	2.05	38	–	–	–	.42	6, 10, 4	7.1	.32
2.26	2.67	41	2.10	1.86	24	–	–	–	0.60	1.60	[1.00]	.58	17, 18	17.5	.41
2.05	2.23	18	1.88	1.45	37	–	–	–	–	–	–	.28	10, 9	9.5	.23
1	–	–	1.00	0.60	40	–	–	–	–	–	–	.40	–	–	.31



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Reductions

Aperture 1			Aperture 3			Aperture 5			Aperture 7			Mean	Residuals	μ	dl
[m]	[m-m]		[m]	[m-m]		[m]	[m-m]		[m]	[m-m]					
3.28	4.03	75	2.17	3.14	97	1.62	2.44	82	0.50	1.80	[1.30]	.85	10, 12, 3	9.2	.54
3.83	3.93	10	2.73	3.00	27	2.09	2.34	25	–	–	–	.21	11, 6, 4	7.6	.18
3.81	3.88	08	2.84	2.98	14	–	–	–	–	–	–	.11	3, 3	3	.10
3.66	3.72	07	2.60	2.75	15	2.00	2.10	10	–	–	–	.10	3, 5, 0	3.3	.09
3.26	3.62	36	2.12	2.64	52	1.67	2.05	38	–	–	–	.42	6, 10, 4	7.1	.32
2.26	2.67	41	1.10	1.86	76	–	–	–	0.60	1.60	[1.00]	.58	17, 18	17.5	.41
2.05	2.23	18	1.08	1.45	37	–	–	–	–	–	–	.28	10, 9	9.5	.23
–	–	–	1.00	1.40	40	–	–	–	–	–	–	.40	–	/	.31

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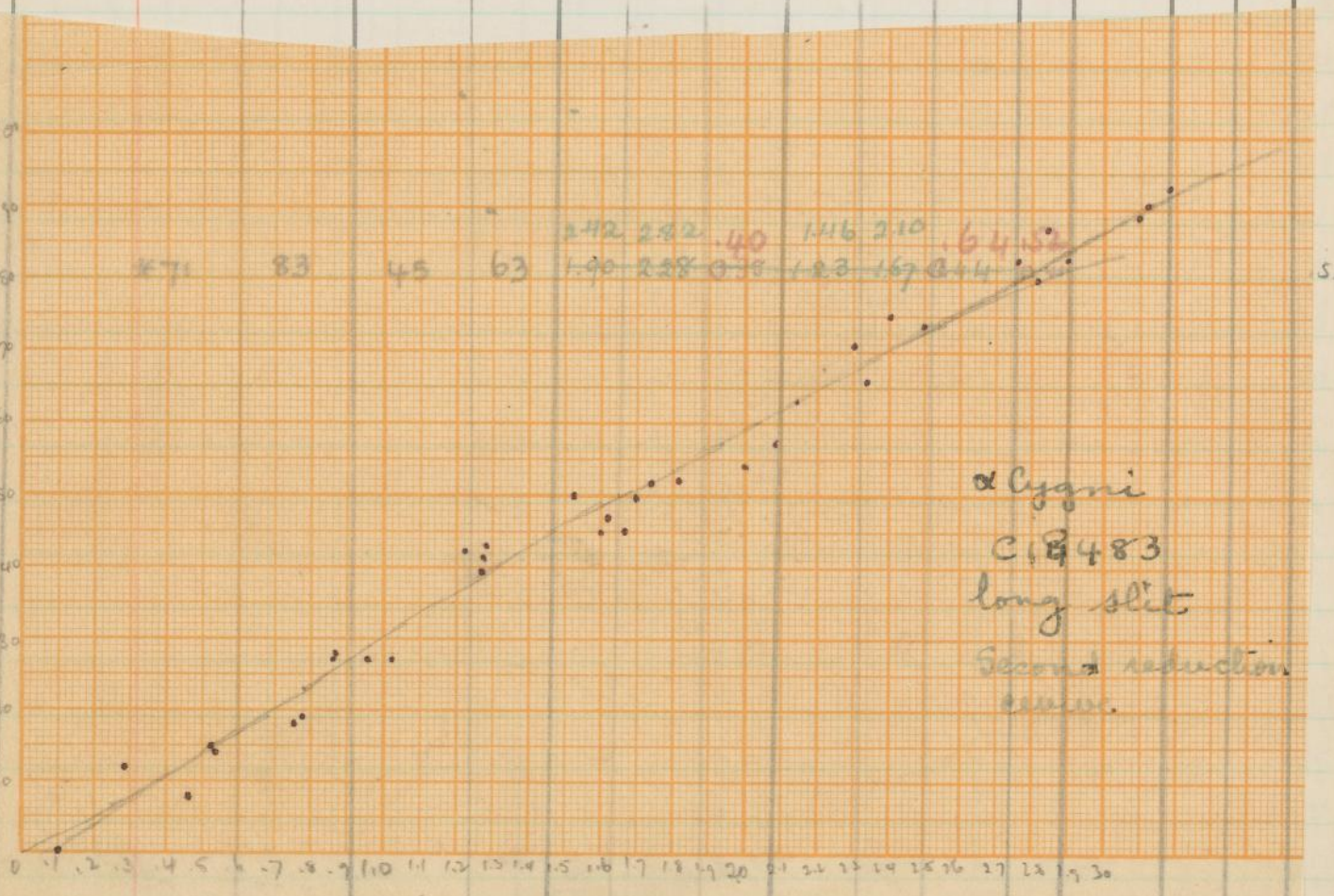
α Cygni C1 8483. Long slit.

No.	Line	Aperture 1 n	Aperture 1 mtn	Aperture 3 n	Aperture 3 mtn	Ap. 1 [n]	Ap. 1 [mtn]	Ap. 1	Ap 3 [n]	Ap 3 [mtn]	Ap 3	Mean	Resid.	μ	dl	dl_2
1		* 7	40	0	15	0.28 ~~0.3~~	1.32 ~~1.1~~	1.14 ~~0.80~~	0.0 ~~0.0~~	.52 ~~0.5~~	[1.52] ~~.50~~	1.14 ~~.65~~				1.04
2																
3																
4																
5																
6																
7																
8		*39	47	23	28	1.28 ~~1.08~~	1.52 ~~1.28~~	24 ~~.20~~	0.80 ~~0.68~~	0.92 ~~0.80~~	12 ~~.12~~	.18 ~~.16~~				.24
9																
10		*21	56	~~0.64~~	~~1.49~~	0.74 ~~.75~~	1.90	1.16				1.16 ~~.75~~				1.20
11		*45	59	~~1.23~~	~~1.58~~	1.46 ~~.35~~	2.00	54				.54 ~~.35~~				
12																
13																
14																
15																
16																
17																
18		*27	74	12	52	0.91 ~~0.77~~	2.54 ~~1.98~~	1.64 ~~1.21~~	0.44 ~~0.43~~	1.75 ~~1.40~~	1.31 ~~0.97~~	1.47 ~~1.09~~				1.47
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																

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No.	Line	Aperture 1		Aperture 2		ap. 1			ap. 2			Mean	Resid.	μ	dl	dl_2
		w	m/m	w	m/m	[n]	[m/m]		[n]	[m/m]						
30						1.34	2.76		0.54	2.06						
31		*41	80	15	61	~~1.14~~ 2.0	~~2.18~~ 1.1	1.42 ~~1.04~~	~~0.50~~ 0.0	~~1.02~~ 0.5	1.52 ~~1.12~~	1.47 ~~1.08~~				1.40
32																
33																
34																
35																
36																
37		*71	83	45	63	2.42 ~~1.90~~	2.42 ~~2.28~~	.40 0.78	1.46 ~~1.23~~	2.10 ~~1.67~~	.64 ~~0.44~~	1.52 ~~1.35~~				1.53
38																
39																
40																
41																
42																
43																
44																
45																
46																
47																
48																
49																
50																
51																
52																
53																
54		*56	89	27	66	1.90 ~~1.49~~	3.08 ~~2.52~~	1.18 ~~1.03~~	0.90 ~~0.77~~	2.26 ~~1.94~~	1.36 ~~0.97~~	1.27 ~~1.23~~				1.29
55																
56																
57																
58																
59																



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Wp.	Line	Aperture 1		Aperture 2		Ap. 1			Ap. 2			Mea	Resid.	μ	dl	dl₂
		w	mtn	w	mtn	[N]	[mtn]		[N]	[mtn]						
30						1.34	2.76		0.54	2.06						
31		*41	80	15	61	~~1.14~~ ~~2.0~~	~~2.18~~ ~~1.1~~	1.42 ~~1.04~~	~~0.60~~ ~~0.0~~	~~1.62~~ ~~0.5~~	1.52 ~~1.12~~	1.47 ~~1.03~~				1.40
32																
33																
34																
35																
36						2.42	2.82	.40	1.46	2.10	.64	1.52				
37		*71	83	45	63	~~1.90~~	~~2.28~~	~~0.38~~	~~1.23~~	~~1.67~~	~~0.44~~	~~0.44~~				1.53
38																
39																
40																
41																
42																
43																
44																
45																
46																
47																
48																
49																
50																
51																
52																
53						1.90	3.08	1.18	0.90	2.26	1.36	1.27				
54		*56	89	27	66	~~1.49~~	~~2.52~~	~~1.03~~	~~0.77~~	~~1.74~~	~~0.97~~	~~1.03~~				1.29
55																
56																
57																
58																
59																

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No.	Line	Aperture 1		Aperture 3		Ap. 1			Ap. 3			Mean	Res.	μ	dl %	dl %
		m	mm	m	mm	[m]	[mm]		[m]	[mm]						
60																
61																
62																
63																
64																
65																
66		*83	91	54	69	2.86	3.14	.72	1.82	2.36	54	64				
						~~2.28~~	~~2.59~~	~~31~~	~~1.45~~	~~1.84~~	~~39~~	~~35~~				
67																
68																
69																
70																
71																
72																
73																
74																
75																
76																
77																
78																
79																
80																
81																
82		*87	93	57	71	3.00	3.22	22	1.94	2.42	48	35				
						~~2.44~~	~~2.66~~	~~22~~	~~1.52~~	~~1.90~~	~~38~~	~~30~~				
83																
84																
85																
86																
87																
88																
89																

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1924phae.proj.11602p

No	Line	Aperture 1		Aperture 3		Ap. 1			Ap. 3			Mean	Res.	μ	dl %	dl_2 %
		n	mtn	n	mtn	[n]	[mtn]		[n]	[mtn]						
90																
91		*51	75	18	45	1.72	2.58	86	0.64	1.46	82	84				.85
						~~1.37~~	~~2.02~~	~~65~~	~~0.57~~	~~1.23~~	~~66~~	~~66~~				
92																
93																
94																
95																
96		*27	42	0	8	0.90	1.36	46	0.00	0.34	34	40				.58
						~~0.78~~	~~1.16~~	~~28~~	~~0.00~~	~~0.35~~	~~35~~	~~32~~				
97																
98																

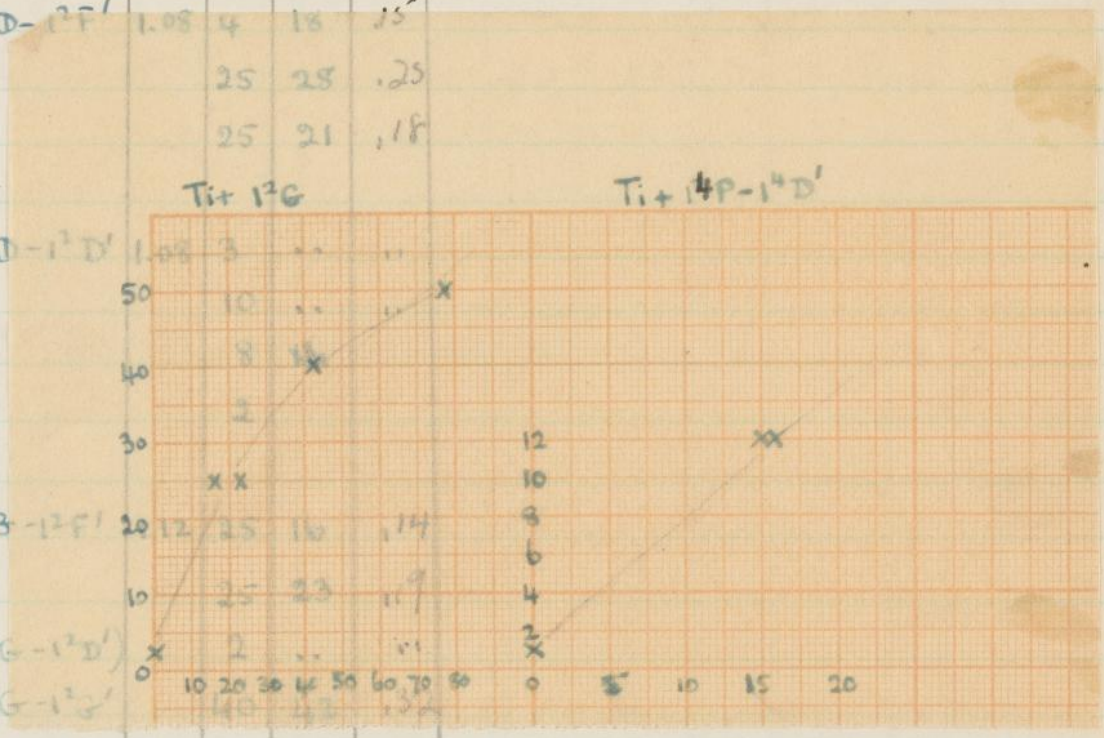
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α Cygni Lines of known series Short slit reductions used

Ionized Titanium

			Int.	Δm	dl	
4450.49	$1^2D - 1^2F'$	1.08	4	18	.15	
4443.80			25	28	.25	
4395.04			25	21	.18	
4344.31	$1^2D - 1^2D'$	1.08	3	..	..	
4337.92			10	..	..	
4294.10			8	13		
4287.88			2			
4501.27	$1^2G - 1^2F'$	1.12	25	16	.14	
4468.49			25	23	.19	
4341.39	$(1^2G - 1^2D')$		2	..	..	
3913.45	$1^2G - 1^2F'$		40	43	.34	
3900.53			50	78	.51	
4417.71	$(1^4P - 1^2D)$	1.16	8	36	.26	
4330.71	$1^4P - 1^4D'$	1.16	1	..	..	
4320.95			1	12	.11	Sc+
4314.98			5	23	.19	Fe
4312.88			7	..	..	
4307.89			12	15	.13	
4301.93			5	33	.26	Ca, Ti+
4300.05			12	16	.14	
4270.23			8			
4708.65	$(1^2P - 1^2F')$	1.22	(2)	..	..	
4589.96	$1^2P - 1^2D'$		3	..	..	
4563.77			15	17	.14	
4533.97			25	17	.14	



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α Cygni Lines of known series Short slit reductions used

Ionized Titanium

			Int.	Δm	dl	
4450.49	$^2D-{}^2F'$	1.08	4	18	.15	
4443.80			25	28	.23	
4395.04			25	21	.18	
4344.31	$^2D-{}^2D'$	1.08	3	..	..	
4337.92			10	..	..	
4294.10			8			
4287.88			2			
4501.27	$^2G-{}^2F'$	1.12	25	16	.14	
4468.49			25	23	.19	
4341.39	$(^2G-{}^2D')$		2	..	..	
3913.45	$^2G-{}^2G'$		40	42	.32	
3900.53			50	78	.51	
4417.71	$(^4P-{}^2D)$	1.16	8	36	.28	
4330.71	$^4P-{}^4D'$	1.16	1	..	..	
4320.95			1	12	.11	Sc+
4314.98			5	23	.19	Fe
4312.88			7	..	..	
4307.89			12	15	.13	
4301.93			5	33	.26	Ca, Ti+
4300.05			12	16	.14	
4270.23			8			
4708.65	$(^2P-{}^2F)$	1.22	(2)	..	..	
4589.96	$^2P-{}^2D'$		3	..	..	
4563.77			15	17	.14	
4533.97			25	17	.14	

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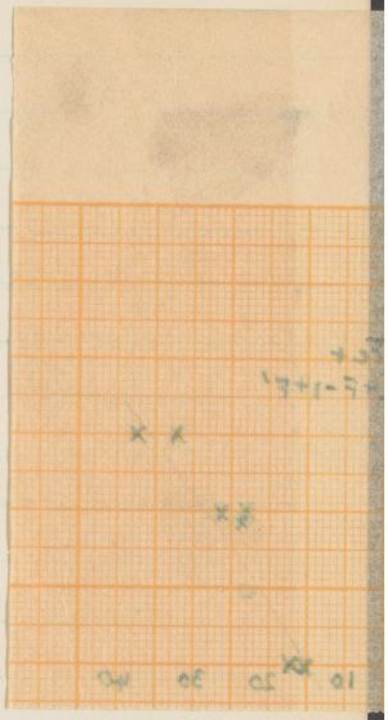
1924phae.proj.1102P

Iron		SP.	Int	Δm	dl	
4369.41	$2^4P-1^4P'$	2.68	..	..	..	
4296.56			6			
4258.16			..	.12	.11	
4178.87			6	53	.39	
4416.81	Fe+ $2^4F-1^4D'$	2.67	4	36	.28	Fe+ $2^4F-1^4F'$
4385.39			8	38	.30	
4351.47			6	38	.30	
4303.18			4	33	.26	
4233.16			8	49	.36	
4173.98			2	22	.20	
4128.74			..	39	.30	Si+
4666.75	$2^4F-1^4F'$	2.82	..	..	..	
4629.33			4	26	.21	
4582.84			..	..	..	
4555.90			6	37	.29	
4534.17			..	17	.14	
4520.24			6	32	.26	
4515.33			6	23	.19	
4491.41			4	23	.19	
4489.21			4	23	.19	
4472.93			..	17	.14	
4620.52	$2^4F-1^4D'$	2.82	..	..	..	
4583.84			8	33	.26	
4576.31			4	20	.17	
4549.48			4	40	.31	
4541.52			..	15	.13	
4522.64			6	32	.26	
4508.29			8	24	.20	

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Ionized Iron		E.P.	Int	Δm	dl	
4369.41	$2^4P-1^4P'$	2.68	..	..	..	
4296.56			6			
4258.16			..	.12	.11	
4178.87			6	53	.39	
4416.81	$2^4P-1^4D'$	2.68	4	36	.28	Ti +
4385.39			..	38	.30	Fe
4351.77			6	38	.30	
4303.18			4	33	.26	
4233.16			8	49	.36	
4173.48			6	42	.32	
4128.74			..	39	.30	Si +
4666.75	$2^4F-1^4F'$	2.82	..	..	..	
4629.33			4	26	.21	
4582.84			..	..	..	
4555.90			6	37	.29	
4534.17			..	17	.14	
4520.24			6	32	.26	
4515.33			6	23	.19	
4491.41			4	23	.19	
4489.21			4	23	.19	
4472.93			..	17	.14	
4620.52	$2^4F-1^4D'$	2.82	..	..	..	
4583.84			8	33	.26	
4576.31			4	20	.17	
4549.48			4	40	.31	
4541.52			..	15	.13	
4522.64			6	32	.26	
4508.29			8	24	.20	



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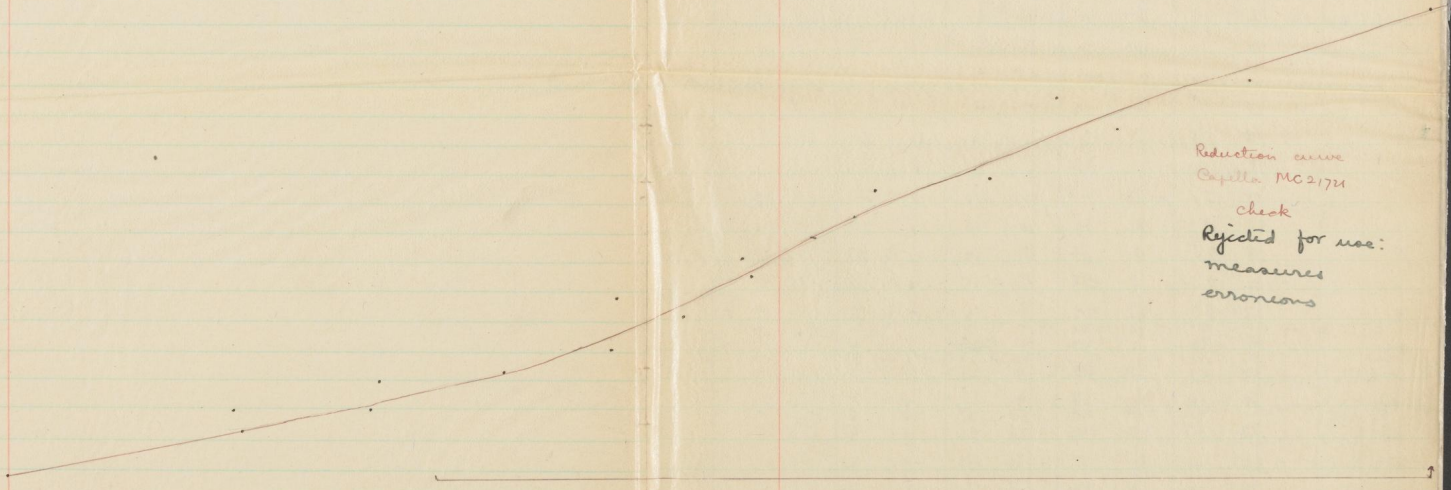
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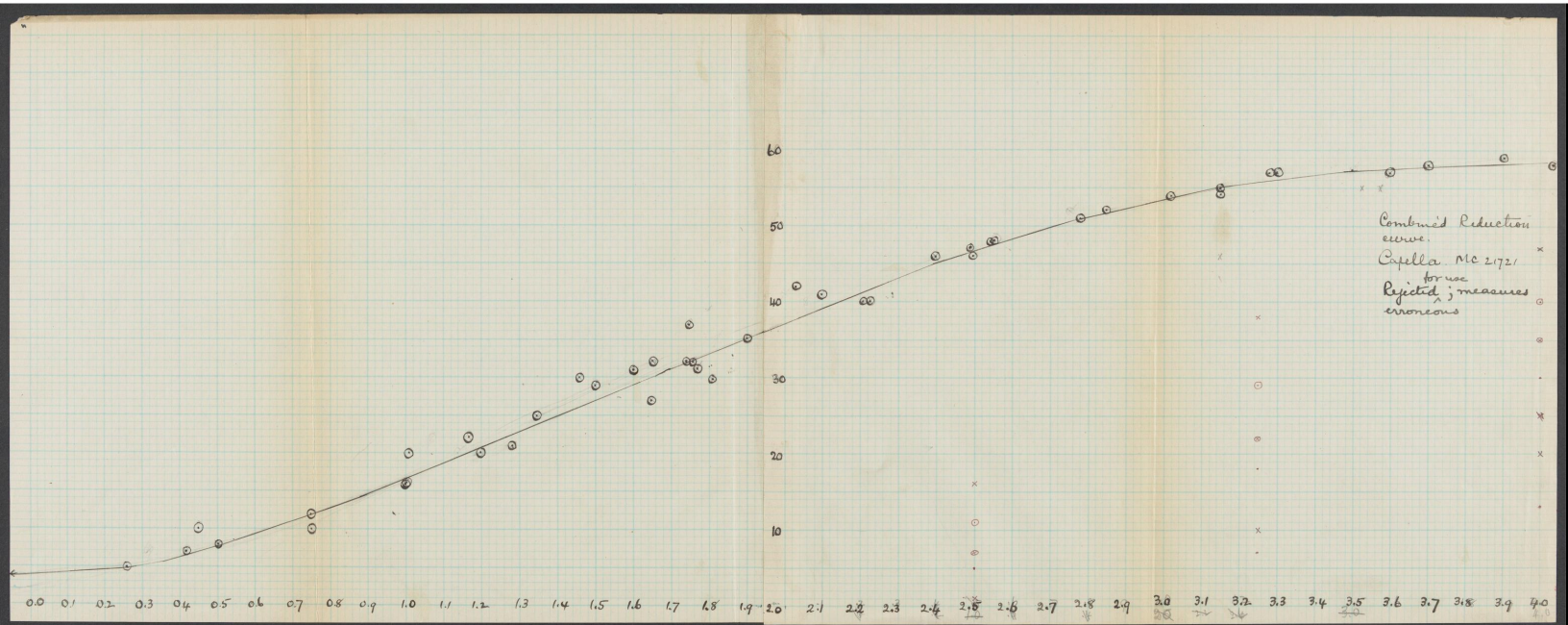
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Reduction curve
Capella MC 2/72
check
Rejected for use:
measures
erroneous

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Capella (α Aurigae) MC 2721 — wrong scale

No.	λ	Ap. 1a n	Ap. 1a m+n	Ap. 1b n	Ap. 1b m+n	Ap. 2 n	Ap. 2 m+n	Ap. 3 n	Ap. 3 m+n	Ap. 4 n	Ap. 4 m+n
1		3	7	5	8	-	-	-	-	-	-
2		4	8	6	9	-	-	-	-	-	-
3		7	9	7	11	-	-	-	-	-	-
4		4	8	8	12	-	-	-	-	-	-
5		7	10	8	13	-	-	-	-	-	-
6		4	10	5	13	-	-	-	-	-	-
7		6	12	7	10	3	6	-	-	-	-
8		5	12	7	14	2	7	-	-	-	-
9		7	14	8	15	4	7	-	-	-	-
10		10	15	11	16	5	8	-	-	-	-
11		11	16	-	-	-	-	-	-	-	-
12		15	17	16	19	-	-	-	-	-	-
13		13	19	13	21	5	10	1	2	-	-
14		12	20	13	22	6	11	1	2	-	-
15		13	20	13	23	7	12	1	2	-	-
16		20	22	21	25	10	13	1	2	-	-
17		17	25	18	26	8	14	1	2	-	-
18		17	26	18	28	7	15	1	2	-	-
19	a	17 a) -	27 a) -	17 a) 19	29 a) 29	8 a) 8	16 a) 16	0 a) -	2 a) -	- a) -	- a) -
20	a	18 a) 30	30 a) 32	17 a) 30	32 a) 35	8 a) 12 18	18 a) 21	2 a) 1 5	4 a) 3 5	a) -	a) -
21										-	-
22		31	34	31	37	19	23	4	6	-	-
23	a	32 a) 32	37	32 32	39 40	20 20	25 26	6 5	8 9	a) -	-
24	✓	35	40	35	43	22	30	7	12	-	-
25		39	43	39	46	27	34	9	14	-	-
26		40	44	40	46	29	35	10	14	-	-
27	✓	40	46	41	47	29	37	11	16	-	-
28	a	47 a) -	48 a) -	47 a) -	49 a) -	32 a) 38 39	38 a) 39	- a) -	16 a) -	a) -	a) -
29		48	49	49	51	39	41	18	19	-	-
30	a	48	51	48	51	38	41	18	21	-	-

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Reductions

Ap. 1a			Ap. 1b			Ap. 2			Ap. 3			Ap. 4			Mean	Res.	μ.	dl
[r]	[mtn]	Δm	[r]	[mtn]	Δm	[r]	[mtn]	Δm	[r]	[mtn]	Δm	[r]	[mtn]	Δm				
	.46		.28	.54	.26	—	—	—	—	—	—	—	—	—				
0.0	.54	.54	.40	.58	.18	—	—	—	—	—	—	—	—	—	36	18, 18	18	.28
.46	.58	.12	.46	.70	.24	—	—	—	—	—	—	—	—	—	18	6, 6	6	.15
0.0	.54	.54	.54	.76	.22	—	—	—	—	—	—	—	—	—	38	16, 16	16	.30
.46	.64	.18	.54	.82	.28	—	—	—	—	—	—	—	—	—	23	5, 5	5	.19
0.0	.64	.64	.28	.82	.54	—	—	—	—	—	—	—	—	—	59	5, 5	5	.42
.40	.76	.36	.46	.82	.36	.39	.40	.01	—	—	—	—	—	—	24	12, 12, 23	16.5	.20
.28	.76	.48	.46	.88	.42		.46		—	—	—	—	—	—				
.46	.88	.42	.54	.92	.38	0.0	.46	.46	—	—	—	—	—	—	42	0, 4, 4	3.3	.32
.64	.92	.28	.70	.92	.22	.28	.54	.26	—	—	—	—	—	—	25	3, 3, 1	2.4	.21
.70	.98	.28	—	—	—	—	—	—	—	—	—	—	—	—	28	0	0	.23
.88	1.02	.14	.92	1.12	.20	—	—	—	—	—	—	—	—	—	17	3, 3	3	.15
.82	1.12	.30	.82	1.21	.39	.28	.64	.36				—	—	—	35	5, 4, 1	6.5	.28
.76	1.17	.41	.82	1.26	44	.40	.70	30				—	—	—				
.82	1.17	.35	.82	1.31	.49	.46	.76	30				—	—	—				
1.17	1.26	.09	1.21	1.40	.19	.64	.82	18				—	—	—				
1.02	1.40	.38	1.08	1.46	.38	.54	.88	34				—	—	—				
1.02	1.46	.44	1.08	1.56	.48	.46	.92	46				—	—	—				
1.02	1.66	.48	1.02	1.60	.58	.54	.98	44				—	—	—				
1.66	1.76	.58	a) 1.12 1.02	a) 1.60 1.75	.48 .73	a) .54 a) .54 .76	.98 a) 1.08 1.17	44 54 41	—	—	—	—	—	—	46	2, 2	2	.35
1.78	1.75	.09	1.66	1.90	.24	1.08	1.21	13	.28	.28	.0	—	—	—	11	2, 1, 3, 2	13.3	.10
1.70	1.85	.15	1.70	2.00	.30	1.12	1.31	19	0.0	.40	.40	—	—	—	26	11, 4, 7, 4	9.8	.21
a) —	—		a) 1.75	2.10	.35	a) 1.17	1.41	24	a) .40	.54	14				24	11, 0, 10	8.5	.20
1.75	2.00	.25	1.75	2.14	.39	1.17	1.46	29	.28	.58	30	—	—	—	31	6, 8, 2, 1	5.1	.25
1.90	2.14	.24	1.90	2.29	.39	1.26	1.66	40	.46	.76	30	—	—	—	33	9, 6, 7, 3	6.6	.26
2.10	2.29	.19	2.10	2.46	.36	1.50	1.85	35	.58	.88	30	—	—	—	30	11, 4, 5, 0	6.7	.24
2.14	2.35	.21	2.14	2.46	.32	1.60	1.90	30	.64	.88	24	—	—	—	27	6, 5, 3, 3	4.5	.22
2.14	2.46	.32	2.20	2.52	.32	1.60	2.00	40	.70	.92	22	—	—	—	31	1, 0, 9, 9	3	.25
a) —	—		a) —	—	—	a) 1.75	2.05	30	—	—	—	—	—	—	30	0		.24
2.52	2.58	.06	2.52	2.65	.13	2.05	2.10	05	.92	1.02	10	—	—	—	8	2, 5, 3, 2	6.5	.07
2.58	2.65	.07	2.65	2.78	.13	2.10	2.20	10	1.08	1.12	04	—	—	—	8	1, 5, 2, 4	3.3	.07
2.58	2.78	.20	2.58	2.78	.20	2.05	2.20	15	1.08	1.21	13	—	—	—	17	3, 3, 1, 4	3	.15
																	0	.08

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λ	ap. 1a		ap. 1b		ap. 2.		ap. 3 (wrong scale)		ap. 4		a
	n	m+n	n	m+n	n	m+n	n	m+n	n	m+n	
31a	a) 48	51	—	—	a) 41	44	a) 20	24	—	—	
31	51	53	50	52	b) 41	44	b) 22	23	b) —	—	
32	50	54	48	52	39	44	18	24	—	—	
33	29	55	28	54	15	46	4	26	—	—	
34	49	56	49	56	39	47	18	28	—	—	
35	51	57	51	56	42	48	21	29	—	—	
36	52	57	53	56	45	48	25	29	—	—	
37	54	57	54	56	46	48	26	30	—	—	
38	54	57	54	57	46	50	27	31	—	—	
39	48	58	48	58	39	50	28	31	8	23	
40	36	58	35	58	25	51	8	34	1	24	
41	~~58~~	~~60~~	—	—	—	—	27	40	13	26	
42	56	58	56	58	50	52	38	41	23	28	
43	~~57~~	~~58~~	57	58	52	52	39	41	28	30	
44	~~57~~	~~58~~	57	59	52	52	40	42	28	31	
45	58	59	56	59	52	54	41	44	27	31	
46	~~58~~	~~59~~	58	60	54	54	43	44	31	32	
47	58	59	56	59	52	55	41	46	26	32	
48	—	—	—	—	55	55	44	46	31	32	
49	—	—	—	—	55	55	44	46	32	32	
50	—	—	—	—	55	55	45	46	32	32	
51	—	—	—	—	55	55	44	46	31	32	
52	—	—	58	59	55	55	45	47	31	33	
53	—	—	59	59	—	—	45	47	31	33	
54	58	61	57	59	53	56	42	47	25	32	
55	—	—	—	—	—	—	44	47	27	31	
56	—	—	59	59	—	—	46	48	30	32	
57	59	62	57	59	53	57	42	48	23	31	
58	—	—	—	—	57	57	47	48	30	31	
59	—	—	—	—	56	57	45	48	27	31	
60	—	—	58	59	55	57	45	48	25	31	

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ap. 1a			ap. 1 t			ap. 2			ap. 3			ap. 4			Mean	Ex. 4	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm			
a) 2.58	2.78	20				a) 2.20	a) 2.25	05	a) 1.17	1.36	19						
2.78	2.96	18	2.71	2.88	17	2.25	2.25	0	1.27	1.31	4	—	—				
						2.20	2.35	15									
2.71	3.06	35	2.58	2.88	30	2.10	2.35	25	1.07	1.36	29	—	—				
1.60	3.15	1.55	1.55	3.05	1.50	0.92	2.46	1.54	1.70	0.38	1.68	—	—		1.57		
2.66	3.30	64	2.66	3.30	64	2.10	2.52	42	1.07	1.56	49	—	—				
2.78	3.44	66	2.78	3.30	52	2.25	2.58	33	1.21	1.60	39	—	—				
2.88	3.44	56	2.96	3.30	34	2.39	2.58	19	1.41	1.60	19	—	—				
3.06	3.44	38	3.06	3.30	24	2.46	2.58	12	1.46	1.66	20	—	—				
3.06	3.44	38	3.06	3.44	38	2.46	2.71	25	1.50	1.70	20	—	—				
2.58	3.80	1.22	2.58	3.80	22	2.10	2.71	61	1.56	1.70	14	.52	1.31				
1.94	3.80	1.86	1.90	3.80	1.90	1.41	2.80	1.39	0.53	1.85	1.32	0.28	1.90	1.62	1.62		
—	—	—	—	—	—	—	—	—	1.50	2.15	65	.81	1.46				
3.30	3.90	60	3.30	3.90	60	2.71	2.88	17	2.04	2.20	16	1.31	1.55	24			
—	—	—	3.44	3.90	46	2.71	2.71	0	2.10	2.20	10	1.55	1.65				
—	—	—	3.44			2.71	2.71	0	2.15	2.25	10	1.55	1.70				
3.40			3.30			2.71	3.06	35	2.20	2.35	15	1.51	1.70				
—	—	—	3.90			3.06	3.06	0	2.29	2.35	6	1.70	1.75				
3.90			3.35			2.71	3.14	43	2.20	2.46	26	1.41	1.75				
—	—	—	—	—	—	3.14	3.14	0	2.35	2.46	11	1.70	1.75				
—	—	—	—	—	—	3.17	3.14	0	2.35	2.46	11	1.75	1.75				
—	—	—	—	—	—	3.14	3.14	0	2.39	2.46	7	1.75	1.75				
—	—	—	—	—	—	3.14	3.14	0	2.35	2.46	11	1.70	1.75				
—	—	—	3.90			3.14	3.14	0	2.39	2.52	13	1.70	1.80				
—	—	—	3.44			—	—	—	2.39	2.52	13	1.70	1.80				
3.90			3.44			2.96	3.30	34	2.25	2.52	27	1.41	1.75				
—	—	—	—	—	—	—	—	—	2.35	2.52	17	1.51	1.70				
—	—	—	[illegible]			—	—	—	2.46	2.58	12	1.66	1.75				
			3.44	—		2.96	3.44	50	2.25	2.58	33	1.31	1.75				
—	—	—	—	—	—	3.44	3.44	0	2.52	2.58	6	1.66	1.75				
—	—	—	3.—	—	—	3.30	3.44	14	2.39	2.58	19	1.51	1.75				
—	—	—	3.90			3.14	3.44	30	2.39	2.58	19	1.41	1.75				

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wrong scale

	ap. 1 a		ap. 1 b		ap 2		ap. 3		ap. 4	
	n	m t n	n	m t n	n	m t n	n	m t n	n	m t n
61	~~55~~	–	–	–	55	56	45	48	31	36
62	58	61	57	59	54	56	42	48	28	36
63	–	–	58	59	56	56	46	49	32	36
64	–	–	58	59	55	56	45	48	32	37
65	58	61	57	59	53	56	42	48	27	37
66	–	–	58	59	56	56	47	48	34	37
67	–	–	59	59	~~56~~ 56	~~56~~ 56	47	48	35	36
68	–	–	58	59	–	–	–	–	35	36
69	–	–	–	–	56	57	45	48	32	36
70	58	60	57	60	53	58	42	48	26	36
71	–	–	–	–	56	57	46	48	33	36
72	–	–	–	–	56	58	46	48	32	35
73	–	–	–	–	56	58	46	48	33	35
74	–	–	–	–	56	58	46	48	32	35
75	58	60	58	60	55	57	45 ~~48~~	48 ~~48~~	30	36
76a	–	–	–	–	–	–	46	48	33	35
77	59	61	57	60	a) 57 55	57 59	a) 48 43	48 47	a) – 30	– 35
78	–	–	–	–	56	58	46	47	33	36
79	–	–	–	–	56	58	45	47	31	36
80	–	–	–	–	55	58	45	47	30	35
81	–	–	–	–	–	–	46	47	32	35
82	–	–	–	–	–	–	47	47	34	36
83	–	–	–	–	–	–	46	47	35	36
84	–	–	–	–	–	–	46	47	34	36
85	58	61	56	60	53	58	42	47	28	36
86	59	61	57	59	55	59	44	47	30	36
87	–	–	–	–	56	59	45	47	32	37
88	–	–	–	–	55	58	45	47	31	37
89	–	–	–	–	–	–	46	47	33	37
90	59	61	57	60	54	58	43	47	29	37

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ap. 12			ap. 14			ap. 2			ap. 3			ap. 4		
[m]	[m+n]	Δ m	[m]	[m+n]	Δ m	[m]	[m+n]	Δ m	[m]	[m+n]	Δ m	[m]	[m+n]	Δ m
3.80	—	—	—	—	—	3.14	3.31	17	2.39	2.58	19	1.70	1.94	24
3.80			3.44			3.06	3.31	25	2.25	2.58	33	1.56	1.94	38
—	—	—	3.80			3.31	3.31	0	2.46	2.66	20	1.75	1.94	19
3.70	—	—	3.80			3.14	3.31	17	2.39	2.58	19	1.75	2.00	25
3.80			3.44			2.96	3.31	35	2.25	2.58	33	1.51	2.00	49
—	—	—	3.80			3.31	3.31	0	2.51	2.58	07	1.85	2.00	15
—	—	—				3.31	3.31	0	2.51	2.58	07	1.89	1.94	5
—	—	—	3.80			—	—	—	—	—	—	1.89	1.94	5
—	—	—	—	—	—	3.31	3.50	19	2.39	2.58	19	1.75	1.94	19
3.80	4.15	35	3.50	4.15	65	2.96	3.70	74	2.24	2.58	34	1.46	1.94	48
—	—	—	—	—	—	3.31	3.50	19	2.46	2.58	12	1.80	1.94	14
—	—	—	—	—	—	3.31	3.70	39	2.46	2.58	12	1.75	1.90	15
—	—	—	—	—	—	3.31	3.70	39	2.46	2.58	12	1.80	1.90	10
—	—	—	—	—	—	3.31	3.70	39	2.46	2.58	12	1.75	1.90	15
3.80			3.80			3.14	3.50	36	2.39	2.58	19	1.66	1.90	24
—	—	—	—	—	—	—	—	—	2.46	2.58	12	1.80	1.89	9
a) —	—		3.50	—		a) 3.30 3.14	3.50	0	a) 2.58 2.29	2.58 2.52	0 23	1.66	1.89	23
—	—	—	—	—	—	3.31	3.70	39	2.46	2.52	6	1.80	1.94	14
—	—	—	—	—	—	3.31	3.70	39	2.39	2.52	13	1.71	1.94	23
—	—	—	—	—	—	3.14	3.70	56	2.39	2.52	13	1.66	1.89	23
—	—	—	—	—	—	—	—	—	2.46	2.52	6	1.75	1.89	14
—	—	—	—	—	—	—	—	—	2.52	2.52	0	1.83	1.94	9
—	—	—	—	—	—	—	—	—	2.46	2.52	6	1.89	1.94	5
—	—	—	—	—	—	—	—	—	2.46	2.52	6	1.85	1.94	9
3.80			3.31			2.96	3.70	74	2.25	2.52	27	1.56	1.94	38
			3.50			3.14			2.35	2.52	17	1.66	1.94	28
—	—	—	—	—	—	3.31			2.39	2.52	13	1.75	2.00	25
—	—	—	—	—	—	3.14	3.70	56	2.39	2.52	13	1.71	2.00	29
—	—	—	—	—	—	—	—	—	2.46	2.52	6	1.80	2.00	20
			3.50			3.06	3.70	64	2.39	2.52	13	1.61	2.00	39

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No	Ap. 1a		Ap. 1b		Ap. 2		Ap. 3 (wrong scale)		Ap. ∞	
	n	mtn	n	mtn	n	mtn	n	mtn	n	mtn
91	–	–	–	–	55	59	44	47	30	37
92	–	–	56	59	55	59	45	47	30	37
93	–	–	–	–	–	–	47	49	34	37
94	–	–	58	59	56	59			33	36
95	59	61	57	59	56	59	46	49	31	37
96	57	61	55	59	53	59	43	50	27	38
97	–	–	58	59	56	59	47	50	33	38
98	–	–	58	59	57	59	47	50	33	38
99	–	–	–	–	–	–	48	50	35	38
100	–	–	–	–	–	–	–	–	37	38
101	60	61	57	59	56	59	47	50	34	38
102	–	–	58	59	57	59	48	50	36	39
103	59	61	57	59	56	59	47	50	34	39
104	59	61	57	59	55	59	46	52	31	40
105	–	–	–	–	57	59	48	52	37	40
106	–	–	58	59	58	59	48	52	36	40
107	–	–	58	59	57	59	48	52	35	41
108	59	61	58	59	56	59	47	53	32	41
109	–	–	–	–	–	–	48	53	35	41
110	58	61	56	59	53	59	42	53	27	41
111	–	–	–	–	–	–	44	53	29	41
112	58	61	56	59	53	59	43	53	28	41
a 113	a) – 59	a) – 61	a) – 58	a) – 59	a) – 55	a) – 59	a) 49 47	a) 53 53	a) – 33	a) 42
114	–	–	59	59	59	59	51	53	39	42
115	58	61	56	59	54	59	45	53	30	42
116	–	–	–	–	–	–		–	38	42
117	–	–	–	–	–	–	–	–	41	42
118	59	61	58	59	57	59	49	53	37	42
119	–	–	59	59	58	59	58	53	40	42
120	–	–	59	59	59	59	51	53	39	42

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Ap. 1a			Ap. 1b			Ap. 2			Ap. 3			Ap. 4		
[m]	[m+m]	Δm	[m]	[m+m]	Δm	[m]	[m+m]	Δm	[m]	[m+m]	Δm	[m]	[m+m]	Δm
–	–	–	–	–	–	3.44			2.35	2.52	17	1.65	2.00	35
–	–	–	3.30			3.44			2.39	2.52	13	1.65	2.00	35
–	–	–	–	–	–	–	–	–	–	–	–	1.85	2.00	15
–	–	–	3.80			3.30			2.52	2.65	13	1.81	1.94	13
3.50			3.46			3.30			2.46	2.65	19	1.71	2.00	29
3.50	–		3.14			2.96			2.29	2.71	42	1.5	2.04	53
–	–	–	3.80			3.30			2.52	2.71	19	1.80 ~~1.85~~	2.04	24
–	–	–	3.80			3.46			2.52	2.71	19	1.80 ~~1.89~~	2.04	24
–	–	–	–	–	–	–	–	–	2.58	2.71	13	1.89 ~~2.00~~	2.04	15
–	–	–	–	–	–	–	–	–	–	–	–	2.00 ~~1.85~~	2.04	14
–	–		3.46			3.30			2.52	2.71	19	1.85 ~~1.94~~	2.04	24
–	–	–	3.80			3.46			2.58	2.71	13	1.94 ~~1.85~~	2.04	15
			3.46			3.30			2.52	2.71	19	1.85 ~~1.71~~	2.15	30
–	–		3.46			3.14			2.46	2.88	42	1.70 ~~1.85~~	2.15	45
–	–	–	–	–	–	3.46			2.58	2.88	30	2.00 ~~1.94~~	2.15	15
–	–	–	3.80			3.80			2.58	2.88	30	1.94	2.15	21
–	–	–	3.80			3.46			2.58	2.88	30	1.89	2.20	31
–	–		3.80			3.30			2.52	2.96	44	1.75	2.20	45
3.80	–	–	–	–	–	–	–	–	2.58	2.96	38	1.81	2.20	39
3.80	–		3.30			2.96			2.25	2.96	71	1.51	2.20	69
3.80	–	–	–	–	–	–	–	–	2.35	2.96	61	1.61	2.20	59
3.80			3.30			2.96			2.29	2.96	67	1.55	2.20	65
a) –	a) –	–	–	–	–	–	–	–	a) 2.65	2.96	31	–	–	–
			3.80			3.14			2.52	2.96	44	1.81	2.25	44
–	–	–							2.78	2.96	18	2.10	2.25	15
3.80			3.30			3.06			2.39	2.96	57	1.65	2.25	60
–	–	–	–	–	–	–	–	–	–	–	–	2.04	2.25	21
–	–	–	–	–	–	–	–	–	–	–	–	2.19	2.25	6
			3.80			3.46			2.65	2.96	31	2.00	2.25	25
–	–	–				3.80			2.71	2.96	25	2.15	2.25	10
–	–	–							2.[illegible]	2.96	18	2.09	2.25	16

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No	λ	ap. 1a		ap. 1b		ap. 2		ap. 3 (wrong scale)		ap. 4	
121		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
122		59	61	58	59	57	59	50	53	38	43
123		58	61	56	58	55	59	47	53	32	43
124		—	—	—	—	58	59	50	53	38	43
125		—	—	—	—	59	59	50	53	38	43
126		—	—	—	—	58	59	50	54	38	43
127		—	—	—	—	59	59	51	54	41	43
128		—	—	—	—	57	59	50	54	39	43
129		—	—	—	—	59	59	51	54	41	44
130		—	—	—	—	—	—	52	54	42	44
131		—	—	—	—	—	—	51	54	42	44
132		—	—	—	—	58	59	52	55	41	44
133		—	—	—	—	59	59	52	55	41	45
134		—	—	—	—	—	—	53	54	45	45
135		—	—	—	—	—	—	52	54	43	45
136		—	—	—	—	58	59	50	54	42	46
137		—	—	—	—	—	—	51	54	41	45
138		—	—	—	—	58	59	52	54	43	45
139		—	—	—	—	—	—	52	55	46	46
140		—	—	—	—	59	59	53	55	43	46
141		—	—	—	—	—	—	52	55	44	46
142		—	—	—	—	—	—	53	55	45	46
143		—	—	—	—	—	—	54	55	46	46
144		—	—	—	—	—	—	55	55	47	47
145		—	—	—	—	—	—	54	55	46	47
146		—	—	—	—	—	—	—	—	47	47
147		—	—	—	—	—	—	53	55	44	47
148		—	—	—	—	—	—	54	55	45	47
149		—	—	—	—	—	—	53	55	47	47
150		—	—	—	—	—	—	54	55	46	47
151		—	—	—	—	—	—	—	—	46	47

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1924phae.proj.1102P

Ap 1a

[n]	[n+n]	Δm
3.80		

Ap. 1b

[n]	[n+n]	Δm
3.80		
3.30	3.80	50

Ap. 2

[n]	[n+n]	Δm	[n]
3.36			
3.13			
3.80			
3.80			
3.80			
3.45			
3.80			
3.80			
3.80			

Ap. 3

[n+n]	Δm

Ap. 4

[n]	[n+n]	Δm

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1924phae.proj.1162P

wrong scale

No	Ap. 1d		Ap. 1b		Ap. 2		Ap. 3		Ap. 4	
	m	mtn	m	mtn	m	mtn	m	mtn	m	mtn
152	—	—	—	—	—	—	—	—	46	48
153	—	—	—	—	—	—	—	—	47	48
154	—	—	—	—	—	—	—	—	46	48
155	—	—	—	—	—	—	—	—	46	48
156	—	—	—	—	—	—	—	—	46	48
157	—	—	—	—	—	—	—	—	47	48
158	—	—	—	—	—	—	—	—	47	48
159	—	—	—	—	—	—	—	—	47	48
160	—	—	—	—	—	—	52	54	45	48
161	—	—	—	—	—	—	—	—	48	49
162	—	—	—	—	—	—	52	54	45	48
163	—	—	—	—	—	—	—	—	46	48
164	—	—	—	—	—	—	—	—	46	48
165	—	—	—	—	—	—	—	—	46	48
166	—	—	—	—	—	—	—	—	45	48
167	—	—	—	—	—	—	—	—	45	48
168	—	—	—	—	—	—	—	—	46	48
169	—	—	—	—	—	—	—	—	44	47
170	—	—	—	—	—	—	—	—	46	47
171	—	—	—	—	—	—	—	—	45	47
172	—	—	—	—	—	—	52	53	43	46
173	—	—	—	—	—	—	—	—	45	45
174	—	—	—	—	—	—	50	52	44	46
175	—	—	—	—	—	—	—	—	43	45
176	—	—	—	—	—	—	—	—	44	45
177	—	—	—	—	—	—	—	—	43	44
178	—	—	—	—	—	—	—	—	40	41
179	—	—	—	—	—	—	—	—	40	41
180	—	—	—	—	—	—	48	50	35	41
181	—	—	—	—	—	—	44	48	33	41

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1924phae.proj.1162P

No	λ	Ap. 1a		Ap. 1b		Ap. 2		Ap. 3		Ap. 4	
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
182		—	—	—	—	—	—	—	—	36	39
183		—	—	—	—	—	—	—	—	34	38
184		—	—	—	—	—	—	—	—	36	38
185		—	—	—	—	—	—	—	—	35	36
186		—	—	—	—	—	—	—	—	32	35
187		—	—	—	—	—	—	—	—	30	35
188		—	—	—	—	—	—	—	—	31	33
189		—	—	—	—	—	—	—	—	30	32
190		—	—	—	—	—	—	—	—	30	31
191		—	—	—	—	—	—	—	—	24	30
192		—	—	—	—	—	—	—	—	27	29
193		—	—	—	—	—	—	—	—	26	27
194		—	—	—	—	—	—	—	—	23	24
195		—	—	—	—	—	—	—	—	22	23
196		—	—	—	—	—	—	—	—	21	22
197		—	—	—	—	—	—	—	—	20	22
198		—	—	—	—	—	—	—	—	17	19
199		—	—	—	—	—	—	—	—	16	18
200		—	—	—	—	—	—	—	—	15	17
201		—	—	—	—	—	—	—	—	15	15
202		—	—	—	—	—	—	—	—	14	14
203		—	—	—	—	—	—	—	—	12	14
204		—	—	—	—	—	—	—	—	13	13
205		—	—	—	—	—	—	—	—	11	12
206		—	—	—	—	—	—	—	—	9	11
207		—	—	—	—	—	—	—	—	8	9
208		—	—	—	—	—	—	—	—	6	8
209		—	—	—	—	—	—	—	—	6	7
210		—	—	—	—	—	—	—	—	6	7
211		—	—	—	—	—	—	—	—	4	5
212		—	—	—	—	—	—	—	—	4	4
213		—	—	—	—	—	—	—	—	4	5
214		—	—	—	—	—	—	—	—	3	6
215		—	—	—	—	—	—	—	—	2	4
216		—	—	—	—	—	—	—	—	1	4

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Capella (α Aurigae) MC 21721

No.	λ.	1a		1b		2		3		4	
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
1		3	7	5	8	~~4~~	-	-	-	-	-
2		4	8	5	9	-	-	-	-	-	-
3		7	9	7	11	-	-	-	-	-	-
4		4	8	8	12	-	-	-	-	-	-
5		7	10	8	13	-	-	-	-	-	-
6		4	10	5	12	-	-	-	-	-	-
7		6	12	7	13	3	6	-	-	-	-
8		5	12	6	13	1	6	-	-	-	-
9		7	14	8	15	4	7	-	-	-	-
10		10	15	11	16	5	8	-	-	-	-
11		11	16	-	-	-	-	-	-	-	-
12		15	17	16	19	-	-	-	-	-	-
13		13	19	13	21	6	10	1	3	-	-
14		12	20	13	22	6	10	0	2	-	-
15		13	20	13	23	6	11	0	2	-	-
16		20	22	20	24	10	13	2	3	-	-
17		17	25	18	26	8	14	1	3	-	-
18		17	26	18	27	8	15	0	2	-	-
19		17	27	17	29	7	15	0	2	-	-
20		18	30	17	31	8	18	1	3	-	-
20a		-	-	-	-	12	20	2	5	-	-
21		30	32	31	35	18	21	5	6	-	-
22		31	34	31	37	19	23	5	7	-	-
22a		-	-	31	38	20	25	6	9	-	-
23		32	37	32	40	20	26	5	10	-	-
24		35	40	35	43	23	31	8	14	-	-
25		39	43	38	45	27	34	10	17	-	-
26		40	44	40	46	29	35	12	18	-	-

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Fa			1b			2			3			4			Mean	Res.	μ	dl
[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm				
1.42	1.78	36	1.60	1.86	26	–	–	–	–	–	–	–	–	–	31	5, 5		25
1.51	1.86	35	1.60	1.92	32	–	–	–	–	–	–	–	–	–	34	1, 2		27
1.78	1.92	14	1.78	2.04	26	–	–	–	–	–	–	–	–	–	20	6, 6		17
1.51	1.86	35	1.86	2.10	24	–	–	–	–	–	–	–	–	–	30	15, 6		24
1.78	1.99	21	1.86	2.16	30	–	–	–	–	–	–	–	–	–	26	5, 4		21
1.51	1.99	48	1.60	2.10	50	–	–	–	–	–	–	–	–	–	49	1, 1		36
1.70	2.10	40	1.78	2.10	32	1.42	1.70	28	–	–	–	–	–	–	33	7, 1, 5		26
1.60	2.10	50	1.70	2.10	40	1.18	1.70	52	–	–	–	–	–	–	47	3, 7, 5		35
1.78	2.20	42	1.86	2.26	40	1.51	1.78	27	–	–	–	–	–	–	36	6, 4, 9		28
1.99	2.26	27	2.04	2.32	28	1.60	1.86	26	–	–	–	–	–	–	27	0, 1, 1		22
2.04	2.32	28	–	–	–	–	–	–	–	–	–	–	–	–	28	0		23
2.26	2.38	12	2.32	2.48	16	–	–	–	–	–	–	–	–	–	14	2, 2		12
2.16	2.48	32	2.16	2.60	44	1.70	1.99	29	1.48	1.72	24	–	–	–	32	0, 12, 3, 8		26
2.10	2.54	44	2.16	2.64	48	1.70	1.99	29	0	1.31	1.31	–	–	–	63	19, 15, 34, 68		44
2.16	2.54	38	2.16	2.70	54	1.70	2.04	34	0	1.31	1.31	–	–	–	64	26, 10, 30, 67		45
2.54	2.68	14	2.54	2.76	22	1.99	2.16	17	1.31	1.42	11	–	–	–	16	2, 6, 1, 5		14
2.38	2.80	42	2.42	2.86	44	1.86	2.20	34	1.18	1.42	24	–	–	–	36	6, 8, 2, 12		28
2.38	2.86	48	2.42	2.91	49	1.86	2.26	40	0	1.31	1.31	–	–	–	67	19, 18, 27, 64		46
2.38	2.91	53	2.38	3.02	64	1.78	2.26	48	0	1.31	1.31	–	–	–	74	21, 10, 26, 57		49
2.43	3.08	65	2.38	3.14	76	1.86	2.43	57	1.18	1.42	24	–	–	–	56	9, 20, 1, 32		40
–	–	–	–	–	–	2.10	2.54	44	1.31	1.60	29	–	–	–	36	8, 7		(28)
3.08	3.19	11	3.14	3.37	23	2.48	2.60	17	1.60	1.70	10	–	–	–	15	4, 8, 2, 5		13
3.14	3.31	17	3.14	3.48	34	2.48	2.70	22	1.60	1.78	18	–	–	–	23	6, 11, 1, 5		19
–	–	–	3.14	3.54	40	2.54	2.80	26	1.70	1.92	22	–	–	–	29	11, 3, 7		23
3.19	3.48	29	3.19	3.66	47	2.54	2.86	32	1.60	1.99	39	–	–	–	36	7, 11, 4, 3		28
3.37	3.66	29	3.37	3.82	45	2.70	3.14	44	1.86	2.20	34	–	–	–	38	9, 7, 6, 4		30
3.60	3.81	21	3.54	3.94	40	2.90	3.31	41	1.99	2.38	39	–	–	–	35	14, 5, 6, 4		28
3.66	3.88	22	3.66	4.00	34	3.02	3.36	34	2.18	2.43	33	–	–	–	31	9, 7, 3, 2		25

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Capella MC 2721

No.	λ	1a		1b		2		3		4	
		n	m-n	n	m-n	n	m-n	n	m-n	n	m-n
27		41	45	41	47	28	36	13	19	—	—
28		47	49	47	49	38	40	21	23	—	—
29		48	50	48	50	39	41	22	24	—	—
30		49	52	48	51	38	42	22	26	—	—
31		51	53	50	52	42	43	26	28	—	—
32		49	53	48	52	39	44	23	30	-	-
33		29	55	28	54	15	46	5	33	0	18
34		48	56	48	55	38	47	22	35	9	19
35		51	56	51	55	42	48	26	36	11	19
36		53	56	53	56	45	49	31	36	16	21
37		54	57	53	56	46	49	32	37	17	22
38		54	57	54	57	47	50	33	38	18	23
39		49	58	48	58	38	51	23	39	9	24
40		36	58	35	58	24	51	9	41	1	24
41		52	59	-	-	-	-	29	41	14	26
42		57	59	55	58	50	52	38	42	23	28
43		-	-	57	58	52	53	40	42	26	28
44		-	-	57	58	52	53	41	43	26	28
45		57	59	57	59	52	54	41	44	26	30
46		-	-	58	59	54	55	43	44	29	31
47		58	60	57	59	52	55	41	44	25	31
48		-	-	-	-	-	-	-	-	31	32
49		-	-	-	-	-	-	44	45	31	32
50		-	-	-	-	-	-	-	-	31	32
51		-	-	-	-	55	56	45	46	31	32
52		-	-	58	59	55	56	44	46	30	33
53		-	-	58	59	55	56	45	47	30	33
54		58	61	57	59	53	56	42	47	25	33
55		-	-	-	-	-	-	43	47	27	32

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1a			1b			2			3			4			Mean.	Res.	μ.	dl
[n]	[mm]	Δm	[n]	[mm]	Δm	[n]	[mm]	Δm	[n]	[mm]	Δm	[n]	[mm]	Δm.				
3.72	3.94	22	3.72	4.04	32	2.97	3.42	45	2.15	2.49	34	–	–	–	33	11, 1, 12, 1		26
4.04	4.16	12	4.04	4.16	12	3.54	3.66	12	2.60	2.70	10	–	–	–	12	0, 0, 0, 2		10
4.10	4.22	12	4.10	4.22	12	3.60	3.72	12	2.64	2.76	12	–	–	–	12	0, 0, 0, 0		10
4.16 4.28	4.34	18	4.10	4.28	18	3.54	3.77	23	264	2.86	22	–	–	–	20	2, 2, 1, 2		17
4.28	4.42	14	4.22	4.34	12	3.77	3.82	05	2.86	2.97	11	–	–	–	10	4, 2, 5, 1		9
4.16	4.42	26	4.10	4.34	24	3.60	3.88	28	2.70	3.08	38	–	–	–	29	3, 5, 1, 9		23
3.02	4.58	1.56	2.97	4.50	1.53	2.26	4.00	1.74	1.60	3.26	1.66	0.74	2.43	1.69	164	8, 9, 10, 2, 5		78
4.10	4.66	56	4.10	4.59	49	3.54 3.77	4.04	50	2.64	3.37	73	1.92	2.48	56	57	1, 8, 7, 16, 1		41
4.28	4.66	38	4.28	4.59	31	3.77	4.10	33	2.86	3.43	57	2.02	2.48	46	41	3, 15, 13, 16, 5		31
4.42	4.66	24	4.42	4.66	24	3.94	4.16	22	3.14	3.43	29	2.32	2.60	28	25	1, 1, 2, 4, 3		28
4.50	4.84	34	4.42	4.66	24	4.00	4.16	16	3.19	3.48	29	2.37	2.64	27	26	8, 2, 10, 3, 1		28
4.50	4.84	34	4.50	4.84	34	4.04	4.22	18	326	3.54	28	2.43	2.70	27	28	6, 6, 10, 0, 1		30
4.16	5.18	1.02	4.10	5.18	108	3.54	4.28	84	2.70	3.60	90	1.86	2.76	90	95	7, 13, 11, 5, 5		58
3.42	5.18	1.76	3.36	5.18	1.82	2.76	4.28	1.52	1.86	3.72	1.86	1.18	2.76	1.58	171	5, 11, 19, 15, 13		79
4.34	5.52	[1.18]	–	–	–	–	–	–	3.02	3.72	70	2.21	2.86	65	68	2, 3		47
4.84	5.52	[68]	4.58	5.18	[60]	4.22	4.34	12	354	3.77	23	2.70	2.97	27	21	9, 2, 6		18
–	–		4.84	5.18	[24]	4.34	4.42	08	3.66	3.77	11	2.86	2.97	11	10	2, 1, 1		9
–	–		4.84	5.18	[24]	4.34	4.42	08	372	3.83	11	2.86	2.97	11	10	2, 11		9
4.84	5.52	[68]	4.84	5.52	[68]	4.34	4.50	16	3.72	3.89	17	2.86	3.08	22	18	2, 1, 4		15
–	–	–	5.20	5.52	[32]	4.50	4.58	08	3.83	3.89	06	3.03	3.14	11	08	1, 0, 2, 3		7
5.20	5.92	[72]	4.84	5.52	[68]	4.34	4.58	24	3.72	3.89	17	2.80	3.14	34	25	1, 8, 9		21
–	–	–	–	–	–	–	–	–	–	–	–	3.14	3.20	06	06	0		5
–	–	–	–	–	–	–	–	–	3.89	3.94	05	3.14	3.20	06	06	1, 0		5
–	–	–	–	–	–	–	–	–	–	–	–	3.14	3.20	06	06	0		5
–	–	–	–	–	–	4.58	4.66	08	3.94	4.00	06	3.14	3.20	06	07	1, 1, 1		6
–	–	–	5.20	5.52	[32]	4.58	4.66	08	3.89	4.00	11	3.08	3.20	16	12	4, 1, 4		10
–	–	–	5.20	5.52	[32]	4.58	4.66	08	3.94	4.04	10	3.08	3.24	16	11	5, 1, 5		10
5.20	?	?	4.84	5.52	[68]	4.42	4.66	24	377	4.04	27	2.80	3.24	44	32	8, 5, 12		26
–	–	–	–	–	–	–	–	–	3.83	4.04	21	192	3.20	28	24	3, 4		20

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Capella MC 2721

No.	λ	1a		1b		2		3		4		
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n	
56		–	–	–	–	–	–	46	48	32	34	56
57		59	61	57	59	53	56	42	48	27	35	57
58		–	–	–	–	–	–	47	48	34	35	58
59		–	–	–	–	–	–	45	48	31	35	59
60		–	–	58	59	54	56	44	48	30	35	60
61		–	–	–	–	55	56	44	48	31	36	61
62		59	61	57	59	54	57	43	48	28	36	62
63		–	–	59	60	56	587	46	48	32	36	63
64		–	–	58	60	55	57	45	48	32	36	64
65		58	61	57	60	53	57	42	48	27	36	65
66		–	–	59	60	56	57	47	49	33	36	66
67		–	–	59	60	–	–	47	49	35	36	67
68		–	–	59	60	–	–	–	–	35	36	68
69		–	–	–	–	56	58	46	49	32	36	69
70		58	61	57	60	53	58	42	49	26	36	70
71		–	–	–	–	–	–	46	49	33	36	71
72		–	–	–	–	–	–	46	49	32	36	72
73		–	–	–	–	–	–	47	49	33	36	73
74		–	–	–	–	–	–	46	49	32	36	74
75		59	61	57	60	55	58	45	49	31	36	75
76		–	–	–	–	–	–	–	–	33	36	76
77		59	61	57	60	54	58	44	48	30	36	77
78		–	–	–	–	–	–	46	48	33	36	78
79		–	–	–	–	–	–	45	48	32	36	79
80		–	–	–	–	55	58	45	48	31	36	80
81		–	–	–	–	–	–	46	48	32	36	81
82		–	–	–	–	–	–	46	47	34	36	82
83		–	–	–	–	–	–	47	48	35	36	83
84		–	–	–	–	–	–	46	48	34	36	84

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omitted from mean

	1a			1b			2			3			4			Mean	Res	μ. dl
	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm			
50	–	–	–	–	–		–	–		4.00	4.10	10	3.20	3.32	12	11	1, 1	
57	5.44			4.84	5.44	60	4.42	4.68	26	3.78	4.10	32	2.92	3.36	44	34		
58	–	–	–	–	–	–	–	–	–	4.04	4.10	6	3.32	3.36	4	5	1, 1	
59	–	–	–	–	–	–	–	–	–	3.94	4.10	16	3.14	3.36	22	19	3, 3	
60	–	–	–	5.08	5.44	36	4.50	4.68	18	3.88	4.10	22	3.08	3.36	28	23	10, 8, 4, 2	
61	–	–	–	–	–	–	4.58	4.68	10	3.88	4.10	22	3.14	3.42	28	20	10, 2, 8	
62	5.44	*		4.84	5.44	60	4.50	4.84	34	3.82	4.10	28	2.96	3.42	46	36		
63	5.44	–	–	5.44	5.90	46	4.68	4.84	16	4.00	4.10	10	3.20	3.42	22	16	23, 7, 3, 1 / 23, 9, 5, 2	
64	–	–	–	5.08	5.90	82	4.58	4.84	30	3.94	4.10	16	3.20	3.42	22	23	4, 5, 7, 2, 1, 6	
65	5.08	*		4.84	5.90	6	4.42	4.84	42	3.78	4.10	32	2.92	3.42	50	41		
66	5.08	–	–	5.44	5.90	46	4.68	4.84	16	4.04	4.16	12	3.26	3.42	16	14	2, 4, 1, 0, 7, 1, 0	
67	–	–	–	5.44	5.90	46	–	–	–	4.04	4.16	12	3.36	3.42	6	09	2, 5, 0, 1, 5	
68	–	–	–	5.44	5.90	46	–	–	–	–	–	–	3.36	3.42	6	06	2, 0, 2, 0	
69	–	–	–	–	–	–	4.68	5.08	40	4.00	4.16	16	3.20	3.42	22	26	14, 10, 1, 4	
70	5.08			4.84	5.90	6	4.42	5.08	66	3.78	4.16	38	2.86	3.42	56	51		
71	–	–	–	–	–	–	–	–	–	4.00	4.16	16	3.26	3.42	16	16	0, 0	
72	–	–	–	–	–	–	–	–	–	4.00	4.16	16	3.20	3.42	22	19	3, 3	
73	–	–	–	–	–	–	–	–	–	4.04	4.16	12	3.26	3.42	16	14	2, 2	
74	–	–	–	–	–	–	–	–	–	4.00	4.16	16	3.20	3.42	22	19	3, 3	
75	5.44			4.84	5.90	6	4.58	5.08	50	3.94	4.16	22	3.14	3.42	28	33		
76	–	–	–	–	–	–	–	–	–	–	–	–	3.26	3.42	16	16	0	
77	5.44			4.84	5.90	6	4.50	5.08	58	3.88	4.10	22	3.08	3.42	34	38		
78	–	–	–	–	–	–	–	–	–	4.00	4.10	10	3.26	3.42	16	13	3, 3	
79	–	–	–	–	–	–	–	–	–	3.94	4.10	16	3.20	3.42	22	19	3, 3	
80	–	–	–	–	–	–	4.58	5.08	50	3.94	4.10	16	3.14	3.42	28	31	19, 15, 3	
81	–	–	–	–	–	–	–	–	–	4.00	4.10	10	3.20	3.42	22	16	6, 6	
82	–	–	–	–	–	–	–	–	–	4.00	4.04	4	3.32	3.42	10	7	3, 3	
83	–	–	–	–	–	–	–	–	–	4.04	4.10	6	3.36	3.42	6	6	0	
84	–	–	–	–	–	–	–	–	–	4.00	4.10	10	3.32	3.42	18	10	0	

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No.	λ	1a		1b		2		3		4	
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
85		59	61	57	60	54	59	42	47	28	36
86		59	61	57	60	55	59	44	47	30	36
87		—	—	—	—	56	59	45	48	31	36
88		—	—	—	—	55	59	45	48	31	37
89		—	—	—	—	—	—	46	48	33	37
90		59	61	57	60	55	59	44	48	29	37
91		—	—	—	—	55	59	44	48	30	37
92		—	—	57	59	55	59	44	48	30	37
93		—	—	—	—	—	—	—	—	34	37
94		—	—	58	59	57	59	47	48	34	37
95		59	61	57	59	56	59	45	48	32	37
96		57	61	55	59	53	59	42	49	27	38
97		—	—	58	59	56	59	47	50	34	38
98		—	—	58	59	56	59	47	50	34	38
99		—	—	—	—	57	59	48	50	35	38
100		—	—	—	—	—	—	—	—	37	38
101		60	61	58	59	56	59	47	50	34	39
102		—	—	58	59	57	59	48	50	35	39
103		59	61	57	59	56	59	47	50	34	39
104		59	61	57	59	55	59	46	52	32	40
105		—	—	—	—	57	59	50	52	36	40
106		—	—	58	59	57	59	49	52	36	40
107				58	59	57	59	49	52	35	40
108		59	61	58	59	56	59	47	53	32	40
109		—	—	—	—	—	—	48	53	35	41
110		58	61	56	59	53	59	43	53	27	41
111		—	—	—	—	—	—	44	53	30	41
112		58	61	56	59	53	59	44	53	28	41
113		59	61	57	59	55	59	46	53	32	42

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omit from mean

1a			1b			2			3			4			Mean	Res.	μ.	db
[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm				
5.40			4.84	5.82	98	4.51	5.40	89	3.78	4.02	24	2.96	3.42	46	35			
5.40			4.84	5.82	98	4.59	5.40	81	3.89	4.02	13	3.08	3.42	34	24			
–	–	–	–	–	–	4.68	5.40	72	3.94	4.10	16	3.14	3.42	28	22	34,23,10		
–	–	–	–	–	–	4.59	5.40	81	3.94	4.10	16	3.14	3.48	34	25	38,27,9		
–	–	–	–	–	–	–	–	–	4.08	4.10	10	3.26	3.48	22	16	6, 6		
5.40			4.84	5.82	98	4.59	5.40	81	3.89	4.10	21	3.62	3.48	44	34			
–	–	–	–	–	–	4.59	5.40	81	3.89	4.10	21	3.68	3.48	40	30	34,26,7		
–	–	–	4.84	5.40	56	4.59	5.40	81	3.89	4.10	21	3.08	3.48	40	30	7,3,2,8,9		
–	–	–	–	–	–	–	–	–	–	–	–	3.31	3.48	17	17	0		
–	–	–	5.10	5.40	30	4.84	5.40	56	4.02	4.10	8	3.31	3.48	17	12	10,36,12,3		
5.40			4.84	5.40	56	4.68	5.40	72	3.94	4.10	16	3.20	3.48	28	22	17,17,23, 11.		
4.84			4.59	5.40	81	4.42	5.40	98	3.78	4.16	38	2.91	3.54 48	63	50			
–	–	–	5.10	5.40	30	4.68	5.40	72	4.02	4.22	20	3.31	3.54 48	23	21	6,36,16,3		
–	–	–	5.10	5.40	30	4.68	5.40	72	4.02	4.22	20	3.31	3.54 48	23	21	6,36,16 13		
–	–	–	–	–	–	4.84	5.40	72	4.10	4.22	12	3.37	3.54 48	17	15			
–	–	–	–	–	–	–	–	–	–	–	–	3.48	3.54	6	06	0		
5.82			5.10	5.40	30	4.68	5.40	72	4.02	4.22	20	3.31	3.60	29	24			
–	–	–	5.10	5.40	30	4.84	5.40	56	4.10	4.22	12	3.37	3.60	23	18	0,26,18,7		
5.40 46			4.84	5.40	56	4.68	5.40	72	4.02	4.22	20	3.31	3.60	29	24			
5.40			4.84	5.40	56	4.59	5.40	81	4.00	4.34	34	3.20	3.65	45	40			
–	–	–	–	–	–	4.84	5.40	56	4.22	4.34	12	3.42	3.65	23	17	26,18,7		
–	–	–	5.10	5.40	30	4.84	5.40	56	4.16	4.34	18	3.42	3.65	23	20	2,24, 14,8		
–	–	–	5.10	5.40	30	4.84	5.40	56	4.16	4.34	18	3.37	3.65	28	23	2,23,15, 5		
5.40			5.10	5.40	30	4.68	5.40	72	4.02	4.42	40	3.20	3.65	45	42			
–	–	–	–	–	–	–	–	–	4.10	4.42	32	3.37	3.72	35	33	1, 2		
5.10			4.68	5.46	72	4.42	5.40	98	3.82	4.42	60	2.91	3.72	81	70			
–	–	–	–	–	–	–	–	–	3.89	4.42	53	3.08	3.72	64	58	5, 6		
5.10			4.68	5.40	72	4.42	5.40	98	3.89	4.42	53	2.96	3.72	76	65			
5.40			4.84	5.40	72	4.59	5.40	81	a) 4.16 4.00	4.42 4.42	26 42	3.20	3.77	57	55			

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No.	λ	1a		1b		2		3		4	
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
114		—	—	59	59	58	59	51	53	40	42
115		58	61	57	59	54	59	45	53	31	42
116		—	—	—	—	—	—	—	—	39	42
117		—	—	—	—	—	—	—	—	40	42
118		59	61	58	59	57	59	49	53	37	42
119		—	—	59	59	58	59	51	53	40	42
120		—	—	59	59	58	59	51	53	40	42
121		60	61	58	59	57	59	50	53	37	42
122		58	61	57	59	55	59	47	54	38	43
123		—	—	—	—	58	59	50	54	38	43
124		—	—	—	—	58	59	51	53	39	43
125		—	—	—	—	57	59	51	53	39	43
126		—	—	—	—	57	59	50	54	38	43
127		—	—	—	—	58	59	51	54	42	44
128		—	—	—	—	57	59	50	54	39	44
129		—	—	—	—	58	59	52	54	41	44
130		—	—	—	—	—	—	52	54	42	44
131		—	—	—	—	—	—	51	54	42	45
132		—	—	—	—	58	59	50	54	41	45
133		—	—	—	—	58	59	51	54	42	46
134		—	—	—	—	—	—	53	54	43	44
135		—	—	—	—	—	—	51	54	43	45
136		—	—	—	—	57	59	51	54	41	45
137		—	—	—	—	—	—	51	55	42	46
138		—	—	—	—	58	59	53	55	44	46
139		—	—	—	—	—	—	—	—	45	46
140		—	—	—	—	59	59	52	55	43	45
141		—	—	—	—	—	—	53	55	44	46
142		—	—	—	—	—	—	53	55	45	46

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Omitted from mean

1a			1b			2			3			4			Mean	Res.	μ. dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm			
–	–	–	5.40	5.40	0	5.10	5.40	30	4.28	4.42	14	3.66	3.77	11	~~11~~ 12	9, 15, 1, 4	
5.10			4.84	5.40	56	4.51	5.40	89	3.94	4.42	48	3.14	3.77	63	~~X X~~ 56	8, 25, 14, 1	
–	–	–	–	–	–	–	–	–	–	–	–	3.66	3.77	17	17	0	
–	–	–	–	–	–	–	–	–	–	–	–	3.66	3.77	11	11	0	
5.40			5.10	5.40	30	4.84	5.40	56	4.16	4.42	26	3.48	3.77	29	28		
–	–	–	5.40	5.40	0	5.10	5.40	30	4.28	4.42	14	3.66	3.77	11	12 ~~X X~~ X	14, 16, 0, 3 ~~15, 12, 4, 7~~	
–	–	–	5.40	5.40	0	5.10	5.40	30	4.28	4.42	14	3.66	3.77	11	12 ~~X X~~ X	14, 16, 0, 3 ~~15, 12, 4, 7~~	
5.82			5.10	5.40	30	4.84	5.40	56	4.21	4.42	21	3.48	3.77	29	25		
5.10			4.84	5.40	56	4.59	5.40	81	4.04	4.58	46	3.25	3.82	57	52		
–	–	–	–	–	–	5.10	5.40	30	4.21	4.50	29	3.54	3.82	28	28	1, 1, 0	
–	–	–	–	–	–	5.10	5.40	30	4.28	4.42	14	3.60	3.82	22	~~X X~~ 18	8, 8, 0	
–	–	–	–	–	–	4.84	5.40	56	4.28	4.42	14	3.60	3.82	22	~~X X~~ 18	25, 17, 9	
–	–	–	–	–	–	4.84	5.40	56	4.21	4.50	29	3.54	3.82	28	~~X X~~ 28	19, 8, 9	
–	–	–	–	–	–	5.10	5.40	30	4.28	4.50	22	3.77	3.89	12	~~X X~~ 17	9, 1, 9	
–	–	–	–	–	–	4.84	5.40	56	4.21	4.50	29	3.60	3.89	29	~~X X~~ 29	18, 9, 9	
–	–	–	–	–	–	5.10	5.40	30	4.34	4.50	16	3.71	3.89	18	~~X X~~ 17	9, 5, 3	
–	–	–	–	–	–	–	–	–	4.34	4.50	16	3.77	3.89	12	14	2, 2	
–	–	–	–	–	–	–	–	–	4.28	4.50	22	3.77	3.94	17	19	3, 2	
–	–	–	–	–	–	5.10	5.40	30	4.21	4.50	29	3.71	3.94	23	27	3, 2, 4	
–	–	–	–	–	–	5.10	5.40	30	4.28	4.50	22	3.77	3.94	17	~~X X~~ 20	7, 1, 6	
–	–	–	–	–	–	–	–	–	4.42	4.50	8	3.82	3.89	7	08	0, 1	
–	–	–	–	–	–	–	–	–	4.28	4.50	22	3.82	3.94	12	17	5, 5	
–	–	–	–	–	–	4.84	5.40	56	4.28	4.50	22	3.71	3.94	23	~~X X~~ 22	23, 11, 10	
–	–	–	–	–	–	–	–	–	4.28	4.58	30	3.77	4.00	23	26	4, 3	
–	–	–	–	–	–	5.10	5.40	30	4.42	4.58	16	3.89	4.00	11	~~X X~~ 14	11, 3, 8	
–	–	–	–	–	–	–	–	–	–	–	–	3.44	4.00	6	06	0	
–	–	–	–	–	–	5.40	5.40	0	4.34	4.58	24	3.82	3.94	12	18	~~12~~ 6, 6	
–	–	–	–	–	–	–	–	–	4.42	4.58	16	3.89	4.00	11	13	3, 2	
–	–	–	–	–	–	–	–	–	4.42	4.58	16	3.94	4.00	6	11	5, 5	

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No	λ	1c		1f		2		3		4	
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
143		—	—	—	—	—	—	54	55	46	46
144		—	—	—	—	—	—	55	55	46	46
145		—	—	—	—	—	—	54	55	45	46
146		—	—	—	—	—	—	—	—	46	46
147		—	—	—	—	—	—	53	55	44	47
148		—	—	—	—	—	—	53	55	46	47
149		—	—	—	—	—	—	54	55	47	48
150		—	—	—	—	—	—	54	55	47	48
151		—	—	—	—	—	—	—	—	46	48
152		—	—	—	—	—	—	—	—	46	48
153		—	—	—	—	—	—	—	—	47	48
154		—	—	—	—	—	—	—	—	45	48
155		—	—	—	—	—	—	—	—	47	48
156		—	—	—	—	—	—	—	—	46	48
157		—	—	—	—	—	—	—	—	47	48
158		—	—	—	—	—	—	—	—	47	48
159		—	—	—	—	—	—	—	—	47	48
160		—	—	—	—	—	—	52	54	46	48
161		—	—	—	—	—	—	—	—	47	48
162		—	—	—	—	—	—	52	54	45	48
163		—	—	—	—	—	—	—	—	46	48
164		—	—	—	—	—	—	—	—	47	48
165		—	—	—	—	—	—	—	—	45	48
166		—	—	—	—	—	—	—	—	45	47
167		—	—	—	—	—	—	—	—	45	47
168		—	—	—	—	—	—	—	—	46	47
169		—	—	—	—	—	—	—	—	45	47
170		—	—	—	—	—	—	—	—	46	47
171		—	—	—	—	—	—	—	—	45	47
172		—	—	—	—	—	—	53	53	43	46

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1a			1b			2			3			4			Mean	Res	μ	dl
[w]	[m+n]	Δw	[n]	[m+n]	Δw	[w]	[m+n]	Δw	[n]	[m+n]	Δw	[n]	[m+n]	Δw				
—	—	—	—	—	—	—	—	—	4.50	4.58	8	4.00	4.00	6	04	4, 4		
—	—	—	—	—	—	—	—	—	4.58	4.58	0	4.00	4.00	6	00	0		
—	—	—	—	—	—	—	—	—	4.50	4.58	8	3.94	4.00	6	07	1, 1		
—	—	—	—	—	—	—	—	—	—	—	—	4.00	4.00	8	00	0		
—	—	—	—	—	—	—	—	—	4.42	4.58	16	3.89	4.04	15	16	0, 1		
—	—	—	—	—	—	—	—	—	4.42	4.58	16	4.00	4.04	4	10	6, 6		
—	—	—	—	—	—	—	—	—	4.50	4.58	8	4.04	4.10	6	7	1, 1		
—	—	—	—	—	—	—	—	—	4.58	4.58	8	4.04	4.10	6	7	1, 1		
—	—	—	—	—	—	—	—	—	—	—	—	4.00	4.10	10	10	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.10	16	16	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.10	16	16	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.00	4.10	10	10	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	4.34	4.50	16	4.00	4.10	10	13	3.3		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	4.34	4.50	16	3.94	4.10	16	16	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.00	4.10	10	10	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.04	4.10	6	6	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.10	16	16	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.04	10	10	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.04	10	10	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.00	4.04	4	4	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.04	10	10	0		
—	—	—	—	—	—	—	—	—	—	—	—	4.00	4.04	4	4	0		
—	—	—	—	—	—	—	—	—	—	—	—	3.94	4.04	10	10	0		
—	—	—	—	—	—	—	—	—	4.34	4.42	8	3.83	4.00	17	13	4 5		

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1900	7	1a		1t		2e		3		4	
		w	mtw	w	mtw	w	mtw	w	mtw	w	mtw
173		—	—	—	—	—	—	—	—	45	46
174		—	—	—	—	—	—	51	53	44	46
175		—	—	—	—	—	—	—	—	44	45
176		—	—	—	—	—	—	—	—	43	46
177		—	—	—	—	—	—	—	—	43	44
178		—	—	—	—	—	—	—	—	41	42
179		—	—	—	—	—	—	—	—	40	42
180		—	—	—	—	—	—	49	50	35	41
181		—	—	—	—	—	—	44	49	33	41
182		—	—	—	—	—	—	—	—	36	40
183		—	—	—	—	—	—	—	—	35	39
184		—	—	—	—	—	—	—	—	36	38
185		—	—	—	—	—	—	—	—	35	37
186		—	—	—	—	—	—	—	—	32	36
187		—	—	—	—	—	—	—	—	30	35
188		—	—	—	—	—	—	—	—	31	33
189		—	—	—	—	—	—	—	—	30	32
190		—	—	—	—	—	—	—	—	31	31
191		—	—	—	—	—	—	—	—	29	31
192		—	—	—	—	—	—	—	—	27	29
193		—	—	—	—	—	—	—	—	26	27
194		—	—	—	—	—	—	—	—	24	25
195		—	—	—	—	—	—	—	—	23	23
196		—	—	—	—	—	—	—	—	20	23
197		—	—	—	—	—	—	—	—	19	21
198		—	—	—	—	—	—	—	—	17	20
199		—	—	—	—	—	—	—	—	15	17
200		—	—	—	—	—	—	—	—	15	17
201		—	—	—	—	—	—	—	—	14	15
202		—	—	—	—	—	—	—	—	15	15

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1924phae.proj.1102P

1a			1b			2			3			4			mean	Res.	μ	dl
[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm	[n]	[mtn]	Δm				
												3.94	4.00	6	6	0		
									4.28	4.42	14	3.89	4.00	11	12	2,1		
												3.89	4.00	11	11	0		
												3.82	4.00	18	18	0		
												3.82	3.89	7	7	0		
												3.72	3.77	5	5	0		
												3.66	3.77	11	11	0		
									4.16	4.22	6	3.37	3.72	35	20	14,15		
									3.89	4.16	27	3.26	3.72	46	36	9,10		
												3.42	3.65	23	23	0		
												3.37	3.66	23	23	0		
												3.42	3.54	12	12	0		
												3.37	3.48	11	11	0		
												3.20	3.42	22	22	0		
												3.08	3.37	29	29	0		
												3.14	3.25	11	11	0		
												3.08	3.20	12	12	0		
												3.14	3.14	0	0	0		
												3.03	3.14	11	11	0		
												2.91	3.03	12	12	0		
												2.86	2.91	5	5	0		
												2.74	2.80	6	6	0		
												2.70	2.70	0	0	0		
												2.64	2.70	6	6	0		
												2.48	2.60	12	12	0		
												2.38	2.53	15	15	0		
												2.25	2.38	13	13	0		
												2.25	2.38	13	13	0		
												2.20	2.25	5	5	0		
												2.25	2.25	0	0	0		

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No.	1c		1f		2		3		4	
	n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
203	—	—	—	—	—	—	—	—	13	14
204	—	—	—	—	—	—	—	—	11	12
205	—	—	—	—	—	—	—	—	11	12
206	—	—	—	—	—	—	—	—	9	11
207	—	—	—	—	—	—	—	—	8	10
208	—	—	—	—	—	—	—	—	6	8
209	—	—	—	—	—	—	—	—	6	8
210	—	—	—	—	—	—	—	—	6	6
211	—	—	—	—	—	—	—	—	5	6
212	—	—	—	—	—	—	—	—	4	5
213	—	—	—	—	—	—	—	—	3	5
214	—	—	—	—	—	—	—	—	2	5
215	—	—	—	—	—	—	—	—	2	4
216	—	—	—	—	—	—	—	—	2	4

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1a			1a			2			3			4			Dreyer	Res	M	dl
[m]	[m+n]	[Δ m]	[m]	[m+n]	Δm	[m]	[m+n]	Δm	[m]	[m+n]	Δm	[m]	[m+n]	Δm				
–	–	–	–	–	–	–	–	–	–	–	–	2.10	2.20	10	10	0		
–	–	–	–	–	–	–	–	–	–	–	–	2.04	2.20	16	16	0		
–	–	–	–	–	–	–	–	–	–	–	–	2.04	2.20	16	16	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.92	2.20	28	28	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.88	1.98	10	10	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.70	1.88	18	18	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.70	1.88	18	18	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.70	1.70	0	0	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.60	1.70	10	10	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.51	1.60	9	9	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.41	1.60	19	19	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.30	1.60	30	30	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.30	1.51	21	21	0		
–	–	–	–	–	–	–	–	–	–	–	–	1.30	1.51	21	21	0		

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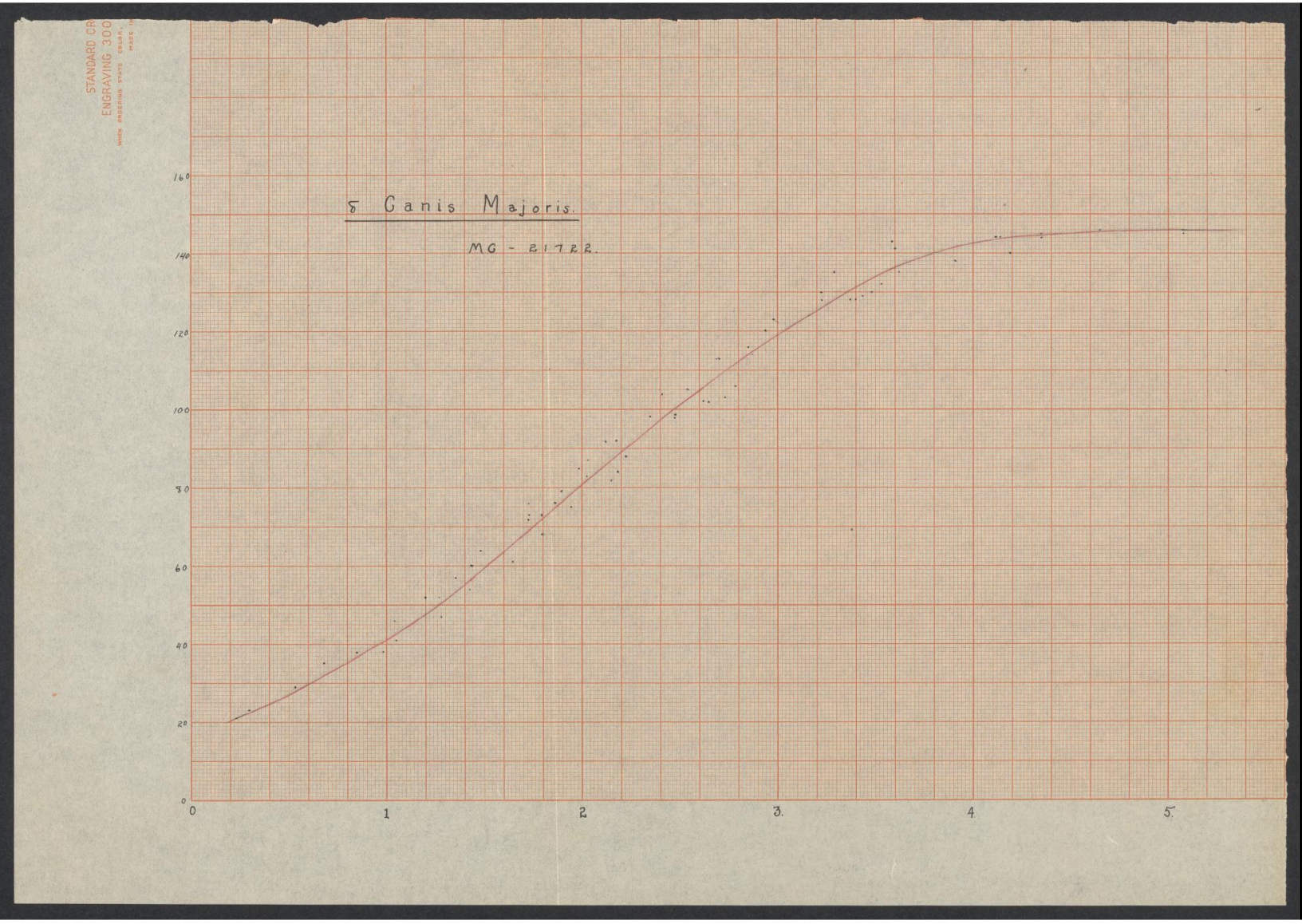
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Reduction Table. δ Canis Majoris. MC-21722.

Defl.	Mag.	Defl.	Mag.	Defl.	Mag.	Defl.	Mag.	Defl.	Mag.
20	19	50	127	80	198	110	274	140	380
21	23	51	129	81	201	111	277	141	386
22	28	52	133	82	203	112	279	142	395
23	32	53	135	83	206	113	282	143	406
24	37	54	137	84	208	114	285	144	419
25	42	55	140	85	210	115	288	145	450
26	46	56	142	86	213	116	291	146	506
27	50	57	144	87	215	117	294	147	>500
28	54	58	146	88	218	118	297		
29	57	59	149	89	220	119	300		
30	61	60	151	90	222	120	303		
31	65	61	153	91	225	121	306		
32	69	62	156	92	228	122	309		
33	72	63	159	93	230	123	313		
34	75	64	161	94	232	124	316		
35	79	65	163	95	235	125	320		
36	83	66	166	96	237	126	323		
37	86	67	169	97	239	127	326		
38	89	68	171	98	242	128	329		
39	93	69	173	99	244	129	332		
40	96	70	175	100	247	130	336		
41	100	71	177	101	250	131	339		
42	103	72	180	102	252	132	343		
43	106	73	182	103	255	133	347		
44	109	74	184	104	258	134	350		
45	112	75	187	105	260	135	355		
46	115	76	189	106	263	136	359		
47	118	77	191	107	266	137	363		
48	121	78	194	108	268	138	369		
49	124	79	196	109	271	139	374		

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84 δ Canis Majoris

Pro	λ	Aperture 1		Aperture 2		Aperture 3		Aperture 4		[illegible]
		n	m+n	n	m+n	n	m+n	n	m+n	
1		92	144	114	145	135	145	143	146	22
2		87	113	106	129	132	140			21
3										
4		85	104	103	124	130	138			21
5										
6		76	143	98	146	128	146	140	147	18
7		73	94	94	115	126	136	–	–	18
8		71	84	93	110	125	132			17
9		67	87	90	109	123	134			16
10		66	82	89	104	122	132			16
11		65	79	88	103	121	130			16
12		64	68	87	93	121	123			16
13		63	71	87	95	120	124			15
14		63	64	86	87	119	121			15
15		61	73	84	96	118	127			15
16		59	81	83	105	117	131	136	144	14
17		59	64	81	88	116	123	136	141	14
18		57	67	80	91	115	125	136	143	14
19		55	70	78	94	114	125	136	142	14
20		54	69	76	93	113	125	136	141	13
21		53	61	76	87	111	120	136	141	13
22		52	68	75	91	111	124	136	143	13
23		51	81	74	105	110	131	135.5	144	12
24		50	64	73	88	109	121	135.5	142	12
25		48	79	70	102	108	128	135	144	12
26		47	63	70	87	107	119	135	141	11
27		46	61	69	86	106	120	135	141	11
28		46	64	69	88	106	123	135	141	11
29		46	72	68	98	105	127	135	147	11

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Ap. 1			Ap. 2.			Ap. 3.			Ap. 4.			Mean	Selected Mean. to 130		
[x]	[m+x]	Δm	[x]	[m+x]	Δm	[x]	[m+x]	Δm	[x]	[m+x]	Δm	Δm	Δm	Residuals	dl.
228	419	191	285	450	165	355	450	95	406	500	94	136	-	-	
215	282	67	263	332	69	343	380	37			-	59	68	1,1	47
		-			-			-			-	-	-	-	
210	258	48	255	316	51	336	369	33			-	44	50	2,1	37
		-			-			-			-	-	-	-	
189	406	217	242	456	208	329	500	171	380	>500	>120	199	212	5,4	86
182	232	50	232	288	46	323	359	36			-	44	48	2,2	36
177	208	31	236	274	44	326	343	23			-	33	38	1,6	30
168	215	47	222	271	49	313	350	37			-	44	48	1,1	36
166	203	37	220	258	38	309	343	34			-	36	38	1,0	30
163	196	33	218	255	37	306	336	30			-	33	35	2,2	28
161	171	10	215	230	15	306	313	07			-	11	11	1,4,4	10
159	177	18	215	235	20	303	316	13			-	17	17	1,3,4	14
159	161	02	213	215	02	300	306	06			-	03	03	1,1,3	3
153	182	29	208	237	29	297	326	29			-	29	29	0,0,0	23
149	201	52	206	260	54	294	339	45	359	419	60	53	50	2,4,5	37
146	161	15	201	218	17	291	313	21	359	386	27	20	18	3,1,3	15
144	168	24	198	225	27	288	320	32	359	406	47	32	28	4,1,4	23
140	175	35	194	232	38	285	320	35	359	395	36	36	36	1,2,1	28
137	173	36	189	230	41	283	320	38	359	386	27	37	38	2,3,0	30
135	153	18	189	215	26	277	303	26	359	386	27	24	23	5,3,3	19
132	171	39	187	225	38	277	316	39	359	406	47	41	39	0,1,0	30
129	201	72	184	260	76	274	339	65	355	419	64	69	71	1,5,6	48
127	161	34	182	218	36	271	306	35	355	395	40	36	35	1,1,0	28
121	196	75	175	252	77	268	329	61	355	419	64	69	71	4,6,10	48
116	159	41	175	215	40	266	300	34	355	386	31	36	38	3,2,4	30
118	153	35	173	213	40	263	303	40	355	386	31	36	38	3,2,2	30
115	161	46	173	218	45	263	313	50	355	386	31	43	47	1,2,3	35
115	180	65	171	242	61	260	326	066	355	7500	>145	-	64	1,3,2	45

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	aperture 1		aperture 2		aperture 3		aperture 4.		(n)
	n	m+n	n	m+n	n	m+n	n	m+n	
30	46 ~~40~~	66 ~~50~~	68	92	105	124	135	143	115
31	46 ~~48~~	51 ~~50~~	67	76	105	110	135	138	115
32	45 ~~42~~	63 ~~51~~	67	88	104	122	134.5	141	112
33	45 ~~44~~	58 ~~51~~	66	83	104	118	134.5	141	112
34	44 ~~43~~	60 ~~51~~	66	85	104	120	134.5	142	109
35	44 ~~47~~	59 ~~52~~	66	84	103	118	134	142	109
36	43 ~~35~~	77 ~~52~~	64	103	102	132	134	144	106
37	43 ~~38~~	71 ~~52~~	64	97	102	126	134	144	106
38	42 ~~43~~	61 ~~52~~	64	87	101	121	134	142	103
39	42 ~~43~~	61 ~~52~~	63	85	101	121	134	142.5	103
40	42 ~~46~~	56 ~~52~~	63	78	101	117	134	140	103
41	41 ~~43~~	59 ~~53~~	62	86	100	120	133.5	143	100
42	41 ~~44~~	64 ~~53~~	62	89	100	123	133	142	100
43	41 ~~46~~	56 ~~53~~	61	79	100	115	133	140	100
44	40 ~~44~~	59 ~~53~~	61	80	99	119	133	138	96
45	39 ~~40~~	66 ~~54~~	60	90	98	124	133	143	93
46	39 ~~43~~	60 ~~54~~	60	84	98	120	133	142	93
47	39 ~~46~~	56 ~~54~~	60	80	98	116			93
48	39 ~~45~~ ↓	52 ~~54~~ ↓	60	75	98	113			93
49	~~38~~	67	59	81	97	119	133	141	89
50	~~38~~ ~~41~~	53 ~~54~~	59	77	97	114	133	140	89
51	38 ~~44~~	49 ~~55~~	58	75	96	111	132.5	138	89
52	37 ~~45~~	56 ~~55~~	57	82	95	117	132	139	86
53	36 ~~50~~	46 ~~55~~	56	68	94	106	132	136	83
54	36 ~~44~~	58 ~~55~~	56	81	94	117	131	140	83
55	36 ~~47~~	53 ~~55~~	55	77	93	114	131	141	83
56	~~35~~ ~~40~~	66 ~~56~~	55	92	92	129	131	143	79
57	35 ~~48~~	52 ~~56~~	54	75	92	113	130	—	79
58	35 ~~43~~	61 ~~56~~	54	83	91	118	130	140	79

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Ap 1			Ap 2			Ap 3			Ap 4			mean	Selected mean		
(m)	(m+m)	D.m.	(m)	(m+m)	D.m.	(m)	(m+m)	D.m.	(m)	(m+m)	D.m.	D.m.	D.m.	Residuals	df.
115	166	51	171	228	57	260	316	56	353	406	51	54	55	4, 2, 1	40
115	129	14	168	189	23	260	274	14	355	369	14	16	17	2, 6, 3	14
112	159	47	168	218	50	258	309	51	355	386	31	45	49	2, 1, 2	36
112	146	34	166	206	40	258	297	39	350	386	36	37	38	4, 2, 1	30
109	151	42	166	210	44	258	303	45	350	395	45	44	44	2, 0, 1	33
109	149	40	166	208	42	255	297	42	350	395	45	42	41	1, 1, 1	31
106	191	85	161	255	94	252	343	91	350	419	69	85	90	5, 4, 1	56
106	177	71	161	239	78	252	323	71	350	419	69	72	73	2, 5, 2	49
103	153	50	161	215	54	250	306	56	350	395	45	51	53	3, 1, 3	39
103	153	50	159	210	51	250	306	56	350	396	46	51	52	2, 1, 4	38
103	142	39	158	194	35	250	294	44	350	380	30	37	39	0, 4, 5	30
101	149	49	156	213	57	247	303	56	349	406	57	55	54	5, 3, 2	39
100	161	61	158	220	64	247	313	66	348	395	47	59	64	3, 0, 2	45
100	142	42	153	196	43	247	288	41	347	386	33	40	42	0, 1, 1	32
96	149	53	153	198	45	244	300	56	347	369	22	44	51	2, 6 5	37
93	166	73	151	222	71	242	316	74	347	406	59	69	73	0, 2, 1	49
93	151	58	151	208	57	242	303	61	347	395	48	56	59	1, 2, 2	42
93	140	47	151	198	47	242	291	49			-	48	48	1, 1, 1	36
93	132	39	151	187	36	242	288	46			-	40	40	1, 4, 6	31
89	168	79	149	201	52	239	300	61	347	386	39	58	64	15, 12, 3	45
89	135	46	149	191	42	239	285	46	346	380	34	42	45	1, 3, 1	34
89	124	35	146	187	41	237	277	40	345	369	24	35	39	4 2, 1	30
86	142	56	144	203	59	235	294	59	343	374	31	52	58	2, 1, 1	41
83	115	32	142	171	29	232	263	31	343	359	16	27	31	1, 2, 0	25
83	146	63	142	201	59	232	294	62	339	380	41	56	61	2, 2, 1	43
83	135	52	140	191	51	232	285	53	339	386	47	51	52	0, 1, 1	38
79	165	86	140	228	88	236	332	94	339	406	67	84	89	3, 1, 5	56
79	132	53	137	187	50	236	282	54	336		-		52	1, 2 2	38
79	153	74	137	206	69	225	297	72	336	380	44		72	2, 3, 0	48

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λ	Aperture 1		Aperture 2		Aperture 3		Aperture 4		(h)
	n	n+n	n	n+n	n	n+n	n	n+n	
59	34	42	53	64	91	102	~~129.5~~	~~136~~	76
60	34	51	53	71	90	108	129.5	136	75
61	34	43	53	65	90	103	129	135	75
62	33	73	52	98	89	128	129	143	72
63	33	51	52	73	89	110	128	137	72
64	32	42	51	62	88	99	128	134	69
65	32	44	50	65	87	103	127	135	69
66	31	47	50	68	87	106	127	134	68
67	31	60	49	81	86	117	126	139	69
68	30	50	48	72	85	112	126	136	61
69	30	51	48	73	85	112	126	138	61
70	30	44	47	64	84	102	126	137	61
71	29	57	47	80	83	116	125	141	57
72	29	39	46	60	83	97	125	132	57
73	28	38	46	68	82	97	125	133	54
74	28	37	46	67	82	96	125	132	54
75	27	51	45	74	81	111	124	138	50
76	27	37	45	67	81	97	124	132	50
77	27	37.5	44	59	80	97	124	132.5	50
78	27	38	44	60	80	98	124	134	50
79	26	44	43	65	79	105	123	136	46
80	26	36	43	56	78	93	123	130	46
81	25	39	42	60	78	98	120	133	42
82	25	33	42	53	77	92	122	130	42
83	25	31	41	50	77	96	122	128	42
84	25	29	41	46	76	93	121	126	42
85	~~24~~	30	41	49	76	86	121	128	37
86	24	33	41	54	76	91	121	130	37
87	24	34	41	55	76	91	121	131	37

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Ap 1			Ap 2			Ap 3			Ap 4			mean	Selected mean		
(n)	(m+n)	D.m.	(n)	(m+n)	D.m.	(n)	(m+n)	D.m.	(n)	(m+n)	D.m.	D.m.	D.m.	Residuals	dl.
76	103	28	135	161	26	225	252	27	~~332~~		-	20	27	1, 1, 0.	22
76	129	54	135	177	42	222	268	46	332	359	27	42	47	9, 5, 1	35
75	106	31	135	163	28	222	255	33	332	355	23	29	31	0, 3, 2	25
72	182	110	132	242	110	220	329	109	329	406	77	102	110	0, 0, 1	64
72	129	57	132	182	50	220	274	54	329	363	34	49	54	3, 4, 0.	39
69	103	34	129	173	44	218	244	26	326	350	24	32	35	1, 9, 9	28
69	109	40	127	163	36	215	255	40	326	355	29	36	39	1, 3, 1.	30
65	118	53	127	171	44	215	263	48	326	350	24	42	48	5, 4, 0.	36
65	151	86	124	201	77	213	294	81	323	374	51	74	81	5, 4, 0	53
61	127	66	121	180	59	210	279	69	323	359	36	57	65	1, 6, 4.	45
61	129	68	121	182	61	210	279	69	323	369	46	61	66	2, 5, 3.	46
61	109	48	118	161	43	208	252	44	323	363	40	44	45	3, 2, 1.	34
57	144	87	118	198	80	206	291	85	320	386	66	79	84	3, 4, 1.	54
57	93	36	115	151	36	206	239	33	320	343	23	32	35	1, 1, 2	28
54	89	35	115	146	31	203	239	33	320	347	27	32	33	2, 2, 0.	26
54	86	32	115	144	29	203	237	34	320	343	23	29	32	0, 3, 2.	26
50	129	79	112	184	72	201	277	76	316	369	53	70	76	3, 4, 0.	50
50	86	36	112	144	32	201	239	38	316	343	27	31	35	1, 3, 3	28
50	87	37	109	149	40	198	239	41	316	343	27	36	39	2, 1, 2.	30
50	89	39	109	151	42	198	242	44	316	350	34	40	42	3, 0, 2.	32
46	109	63	106	163	57	196	260	64	313	359	46	57	61	2, 4, 3.	43
46	83	37	106	142	36	194	230	36	313	336	23	34	34	3, 2, 2, 11	27
42	93	51	103	151	48	194	242	48	303	347	44	48	49	2, 1, 1,	36
42	72	30	103	135	32	191	228	37	309	336	29	32	32	2, 0. 5, 3	26
42	65	23	101	127	27	191	213	22	309	329	20	23	23	0. 4, 1, 3	19
42	57	15	100	115	15	189	206	17	306	323	17	16	16	1, 1, 1, 1,	14
37	61	24	100	124	24	189	213	24	306	329	23	24	24	0, 0, 0, 1	20
37	72	35	100	137	37	189	225	36	306	336	30	34	34	1, 3, 2, 4.	27
37	75	38	100	140	40	189	225	36	306	339	33	37	37	1, 3, 1, 4.	29

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λ	aperture 1		aperture 2		aperture 3		aperture 4		(m)
	n	m+n	n	m+n	n	m+n	n	m+n	
88	24	33	41	53	76	90	121	129	3
89	24	29	40	49	75	85	121	126	3
90	23	33	40	53	75	94	121	128	3
91	23	38	40	58	75	101	121	133	3
92	23	32	40	52	75	88	120.5	127	3
93	23	28	40	47	74	84	120	126	3
94	22	35	40	55	74	93	120	131	2
95	22	30	40	51	74	88	120	127	2
96	22	26	39	44	74	90	120	123	2
97	21	28	39	47	73	83	119	126	2
98	21	26	39	46	73	82.5	119	124	2
99	21	26	38	44	73	83	119	123	2
100	21	25	38	44	73	80	119	122	2
101	21	26	39	45	73	~~81~~	119	124	2
102	22	31	39	52	74	88	119	127	2
103	22	24	39	42	74	77	119	121	2
104	23	28	41	47	75	85	120	125	3
105	24	29	42	48	76	84	121	127	3
106	24	27	43	45	76	84			3
107	25	39	45	55	81	95	123	130	4
108	27	30	47	50	83	88	125	127	5
109	28	32	50	52	86	91	126	128	5
110	29	34	51	56	87	94	128	131	5
111	30	32	51	53	88	89	128	129	6
112	31	37	53	58	90	97	129	132	6
113	33	36	55	57	~~93~~	~~96~~			7
114	36	40	57	64	93	96	131	134	8
115	37	59	60	95	99	127	133	144	8
116	39	47	62	72	101	110	134	139	9

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Ap 1			Ap 2			Ap 3			Ap 4			mean	Selected mean		
(m)	(m+M)	D.m.	(m)	(m+M)	D.m.	(m)	(m+M)	D.m.	(m)	(m+M)	D.m.	D.m.	D.m.	Residuals	dl.
37	72	35	100	135	35	189	222	33	306	332	26	32	32	3, 3, 1, 1	26
37	57	20	96	124	28	187	210	23	306	323	17	22	22	2, 6, 1, 5.	18
32	72	40	96	135	39	187	232	45	306	329	23	37	37	3, 2, 8, 14	29
32	89	57	96	146	50	187	250	63	[306	347	41]	52	56	1, 6, 7.	40
32	69	37	96	132	36	187	218	31	305	326	21	31	31	6, 5, 0. 10	25
32	54	22	96	118	22	184	208	24	303	323	21	22	22	0, 0, 2. 1	18
28	79	51	96	140	44	184	230	46	303	339	36	44	44	7, 0, 2, 8.	33
28	61	33	93	129	36	184	218	34	303	326	23	31	31	2, 5, 3, 8	25
23	46	23	93	109	16	184	222	38	303	313	11	22	22	1, 6, 16, 11	18
23	50	27	93	118	25	182	206	24	300	323	23	25	25	2, 0, 1, 2	21
23	46	23	93	115	22	182	203	21	300	316	16	22	20	3, 0, 1, 4	17
23	46	23	89	109	20	182	202	20	300	313	13	19	19	4, 1, 1, 6	16
23	42	19	89	109	20	182	198	16	300	309	09	16	16	3, 4, 0, 7	14
23	46	23	93	112	19	182	201 111	19 68	300	316	16	20	20	3, 1, 1, 4	17
28	65	37	93	132	39	184	218	34	300	326	26	34	34	3, 5, 0, 8	27
28	37	09	93	103	10	184	191	07	300	306	06	08	08	1, 2, 1, 2	07
32	54	22	100	118	18	187	210	23	303	320	17	20	20	2, 2, 3, 3	17
37	57	20	103	121	18	189	208	19	306	326	20	19	19	1, 1, 0, 1	16
37	50	13	106	112	06	189	208	19			—	12	12	1, 6, 7	10
42	93	51	112	140	28	201	235	34	313	336	23	34	34	17, 6, 0, 11	27
50	61	11	118	127	09	206	218	12	320	326	06	10	10	1, 1, 2, 4	09
54	69	15	127	132	05	213	225	12	323	329	06	10	10	5, 5, 2, 4	09
57	75	18	129	142	13	215	232	17	329	339	10	14	14	4, 1, 3, 4	12
61	69	08	129	135	06	218	220	02	329	332	03	05	05	3, 1, 3, 2	04
65	86	21	135	146	11	222	239	17	332	343	11	15	16	6, 5, 5, 1 / 4, 1	14
72	83	11	140	144	04	—	—	—	—		—	08	08	3, 4	07
83	96	13	144	161	17	230	237	07	339	350	11	12	12	1, 5, 5	10
86	149	63	161	210	59	244	309	65	347	419	72	40	62	1, 3, 3	44
93	118	25	186	180	24	250	274	24	350	374	24	24	24	1, 0, 0	20

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	Aperture 1		Aperture 2		Aperture 3		Aperture 4	
	n	m+n	n	m+n	n	m+n	n	m+n
117	41	49	64	73	104	112	135	139
118	42	47	65	72	105	112	136	137
119	49	46	67	71	107	112	136	139
120	49	60	74	87	112	123	137	141.5
121	52	57	76	83	114	120	—	—
122	57	60	83	87	120	122	—	—
123	61	62	89	89	122	125	—	—
124	—	75	93	102	125	131	—	—
125	—	90	106	116	131	137	—	—
126								

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Means from Bk. II, p. 87. Beginning line 55

52	86	53	74	28	54	31	110	
51	88	50	69	26	42	28	110	
53	94	54	72	27	46	33	109	
156	268	157	215	81	142	92	329	
52	89	52	71	27	47	31	110	
47	67	5	44	7	27	23	77	
203	335	157	259	81	169	115	406	
51	84	39	65	20	42	29	102	

57	34	40	53	86	66	68	48	87
50	44	36	44	77	59	61	43	80
54	26	40	48	81	69	69	44	85
161	106	116	145	244	194	198	135	252
54	35	39	48	81	65	66	45	84
34	24	27	24	51	36	46	40	66
195	130	145	169	295	230	244	175	318
49	32	36	42	74	57	61	44	79

36	36	32	79	36	37	39	63	37
36	31	29	72	32	40	42	57	36
33	33	34	76	38	41	44	64	36
105	100	95	227	106	118	125	184	23
35	33	32	76	35	39	42	61	132
23	27	23	53	27	27	34	46	34
128	127	118	280	223	145	159	230	
32	32	29	70	31	36	40	57	

51	30	23	15	24	35	38
48	32	27	15	24	37	40
48	37	22	17	24	36	36
147	29	20	17	23	30	33
49	128	92	64	95	138	147
44	32	23	16	24	34	37
191						
48						

35	20	40	57	37	22	51	33	23
35	28	39	50	36	22	44	36	16
33	23	45	63	31	24	46	34	38
26	17	23	170	21	21	36	23	11
129	88	147	56	125	89	177	126	88
32	22	37	41	31	22	44	31	22

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27	23	23	19	23	37	09	22	20
25	22	20	20	19	39	10	18	18
24	21	20	16	19	34	07	23	19
23	16	13	09	16	26	06	17	20
99	86	76	64	81	136	32	80	77
25	22	19	16	20	34	08	20	19

13	51	11	15	18	08	21	11	13
06	28	09	05	13	06	11	04	17
19	34	12	12	17	02	17	15	07
X	23	06	06	10	03	49		37
38	136	38	38	58	19	16	8	42
12	34	10	10	14	05	11		11
						60		48
						15		12
								1

63	25	24	15	-3	27	12	07	03
59	24	22	17	09	31	17	09	00
65	24	21	19	13	34	18	06	11
87	73	67	51	19	92	47	22	14
29	24	22	17	06	31	16	07	05

72	24	19	04	15	23
159	97	86	55	34	115
40	24	22	14	08	29

22	28
19	24
41	52
20	26

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Ap 1			Ap 2			Ap 3			Ap 4			Mean	Selected Mean		
(n)	(n+1)	D.m.	(n)	(n+1)	D.m.	(n)	(n+1)	D.m.	(n)	(n+1)	D.m.	D.m.	D.m.	Residuals	dC.
100	124	24	161	182	21	258	279	21	355	374	19	22	22	2, 1, 1	18
103	118	15	163	180	17	260	279	19	359	363	04	14	17	3, 0, 2	14
118	115	03	168	177	09	266	279	13	359	374	15	08	06	9, 3, 7	05
124	151	27	184	215	31	279	313	34	363	386	23	29	31	4, 0, 3	25
132 ~~144~~	144	12	189	206	17	285	303	18	—	—	-	16	16	4, 1, 2	14
144 ~~153~~	151	07	206	215	09	303	309	06	—	—	-	07	07	0, 2, 1	06
153	156	03	220	220	00	309	320	11	—	—	-	05	05	2, 5, 6	04
	187	-	236	252	22	320	339	19	—	—	-	20	22	-	18
	222	-	263	291	28	339	363	24	—	—	-	26	28	-	23

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Pleiades H 2605 (Panchromatic plate)

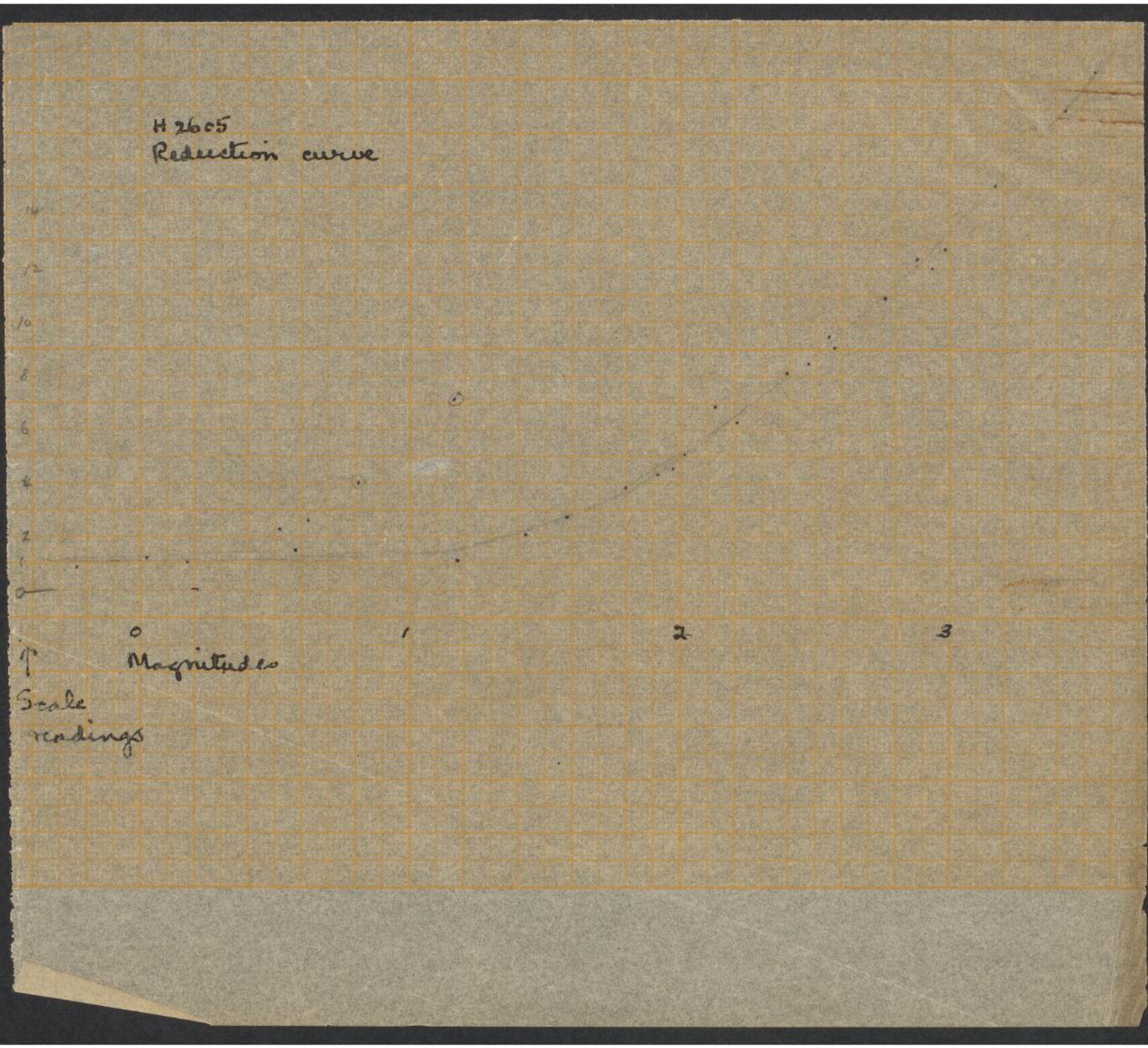
No.	λ	1 (2m.96)		2		3		4		5 (4m.37)		6 (5m.43)	
		n	m+n	n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
1		1.4								7.7		17.1	
2	Hβ	1.5								4.5		11.9	12.9
3	Hγ	0.8								1.1		6.9	8.5
4	Hδ	1.1								2.0		8.0	10.1
5	Hε	1.1								2.9	4.6	9.5	11.7
6	Hζ	1.6								3.8	5.2	10.9	12.4
7	Hη	2.2								4.2	5.9	12.1	13.9
8	Hθ	2.5								5.0	6.1	12.5	14.1
9	Hι	4.0								6.1	9.0	15.0	17.0
10		7.0								9.0	-	19.5	-

Mira

		n	m+n	[n]	[m+n]	dm
1	K	12.0	17.0	287	334	47
2	Hδ	7.5	4.5	243	194	51
3	Hγ	4.8	2.9	208	162	54
4		3.0	5.7	166	210	34
5		3.0	4.6	166	196	30

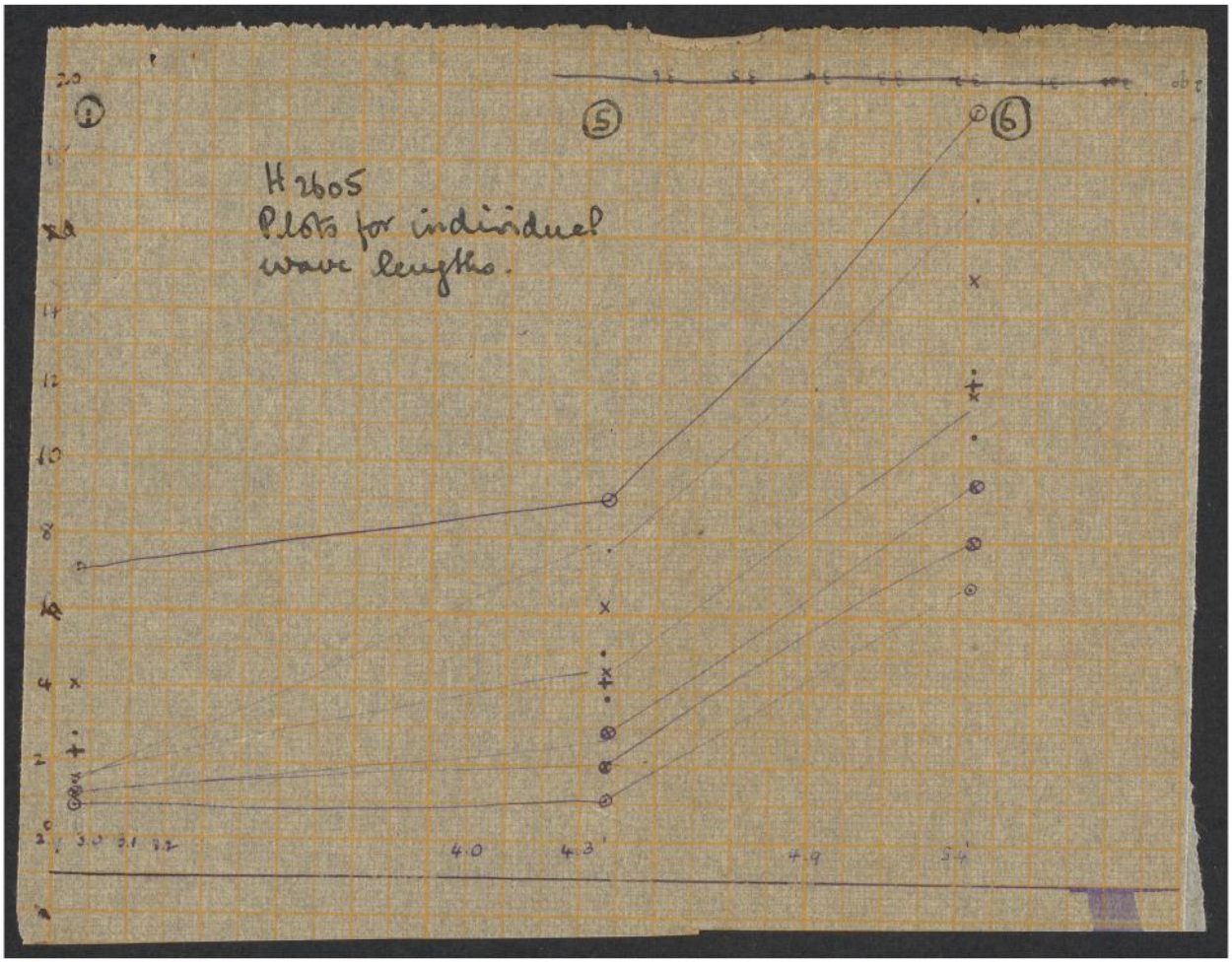
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5			6			
[n]	[m+n]	Δm	[n]	[m+n]	Δm	
			285	296	11	11
			275	247	22	22
			240	266	26	26
162	191	29	259	283	24	26
182	203	21	264	291	27	24
185	212	27	288	304	16	22
200	215	15	295	307	12	14
215	253	38	296	334	38	38

Mira and No. 6. compared.

Mira n	6 n	Δm	Line
4.8	6.9	199-224 -25	Hγ
7.5	8.0	233-240 -07	Hδ

On this plate Mira is completely superimposed on another spectrum

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Pleiades H 2604 (Preston)

No.	λ		1 (2.96)		2 (3.81)		3 (4.25)		5 (4.37)		6 (5.43)		7 (6.46)	
			n	m+n	n	m+n	n	m+n	n	m+n	n	m+n	n	m+n
1		Hβ	0.7	-	-	-	0.9	-	0.4	0.7	2.5	3.6	6.9	8.0
2		Hγ	0.0	-	-	-	0.5	-	0.0	0.0	1.7	2.8	4.2	6.2
3		Hδ	0.0	-	-	-	0.7	-	0.1	0.5	2.0	3.6	5.4	8.0
4		Hε	0.0	-	0.4	-	1.0	-	0.3	1.0	2.6	4.1	7.0	9.4
5		Hζ	0.0	-	0.7	-	1.1	-	0.7	1.1	3.1	4.5	7.5	10.3
6		Hη	0.1	-	-	-	1.3	-	0.9	1.2	4.0	5.2	9.8	11.2
7		Hθ	0.3	-	-	-	1.6	-	1.1	-	5.0	6.0	10.5	12.1
8			0.4	-	-	-	2.0	-	1.3	-	5.6 ~~6.0~~ 6.4		12.1	13.1
9			-	-	-	-	-	-	-	-	-	-	13.0	14.1

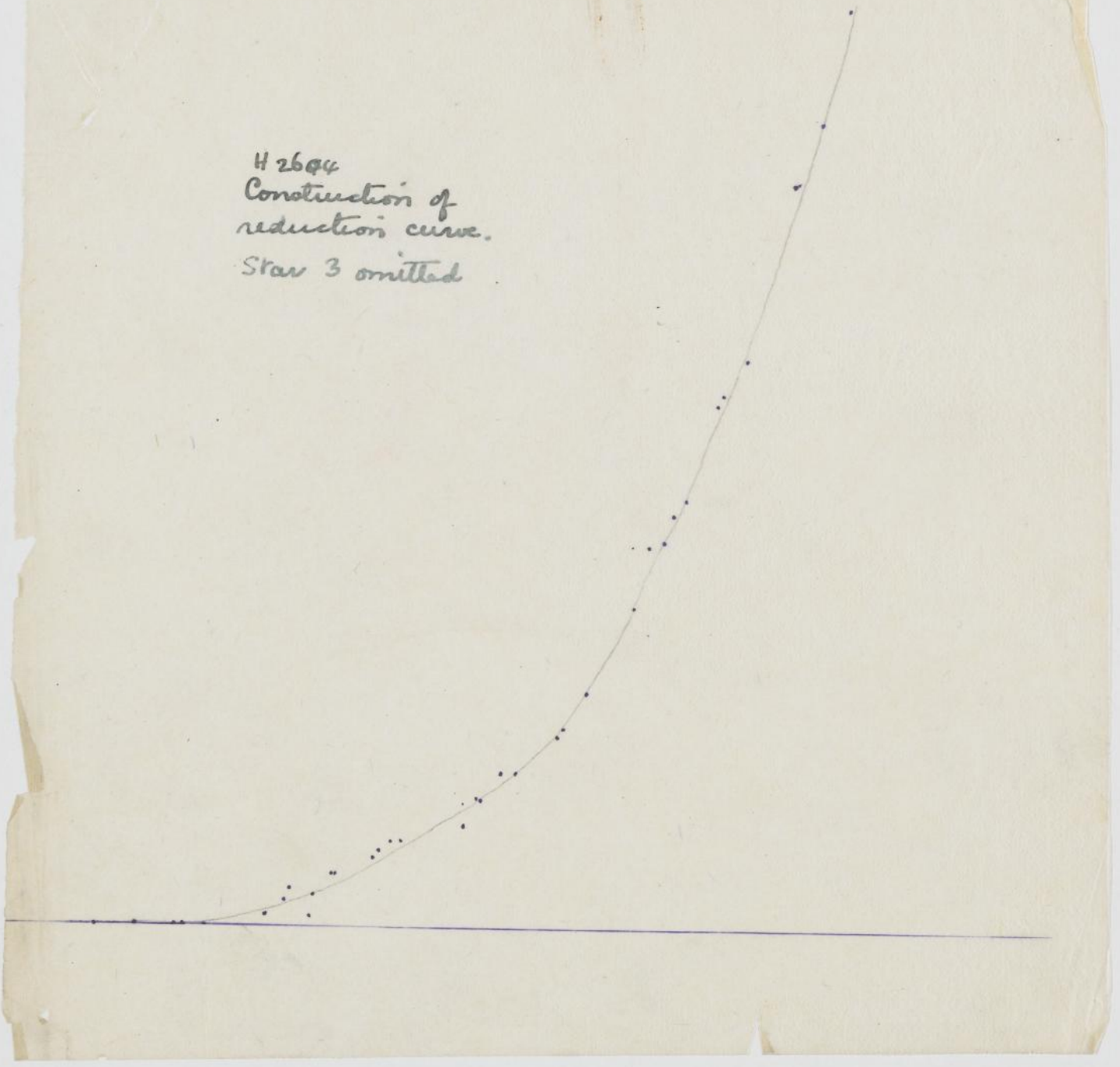
Star 1 as standard. Diff. of mag. from Hγ, and Hζ-Hε

	No. 1		No. 2		No. 3		No. 5		No. 6		No. 7	
	[n]	Δm	[n]	Δm	[n]	Δm	[n]	Δm	[n]	Δm	[n]	Δm
Hγ	0.5	..	..	..	~~1.1~~ 1.9	~~3.6~~ 1.4	~~0.5~~ 0.5	~~0.0~~ 0.0	2.9	2.4	3.9	3.4
Hε-Hζ	~~1.9~~ 0.5	..	~~4.2~~ 1.9	~~2.3~~ 1.4	~~5.1~~ 2.4	~~3.2~~ 1.9	2.0	1.5	3.5	3.0	4.6	4.1
Diff.					0.5		?		0.6		0.7	

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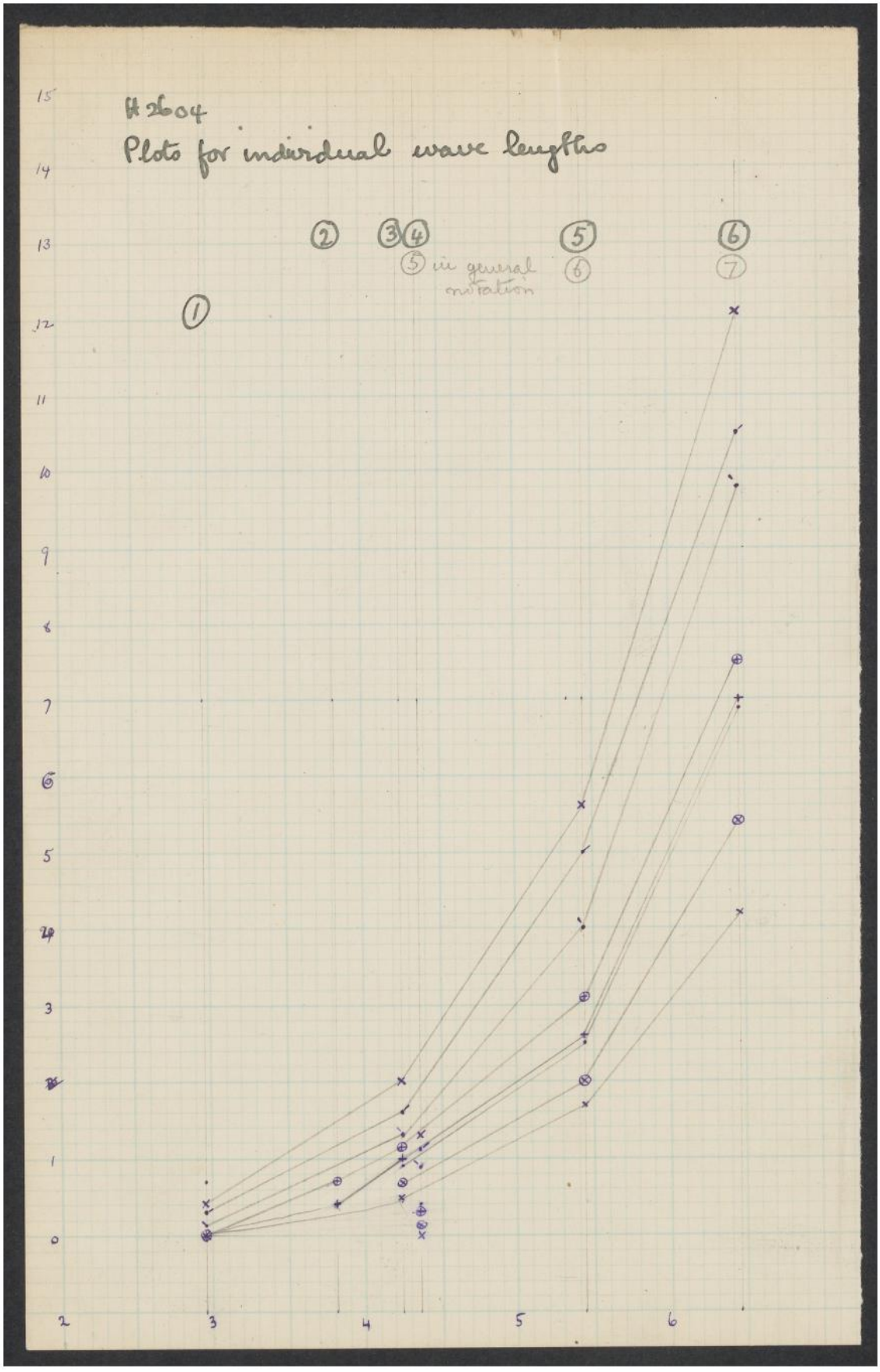
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H 2604
Construction of
reduction curve.
Star 3 omitted



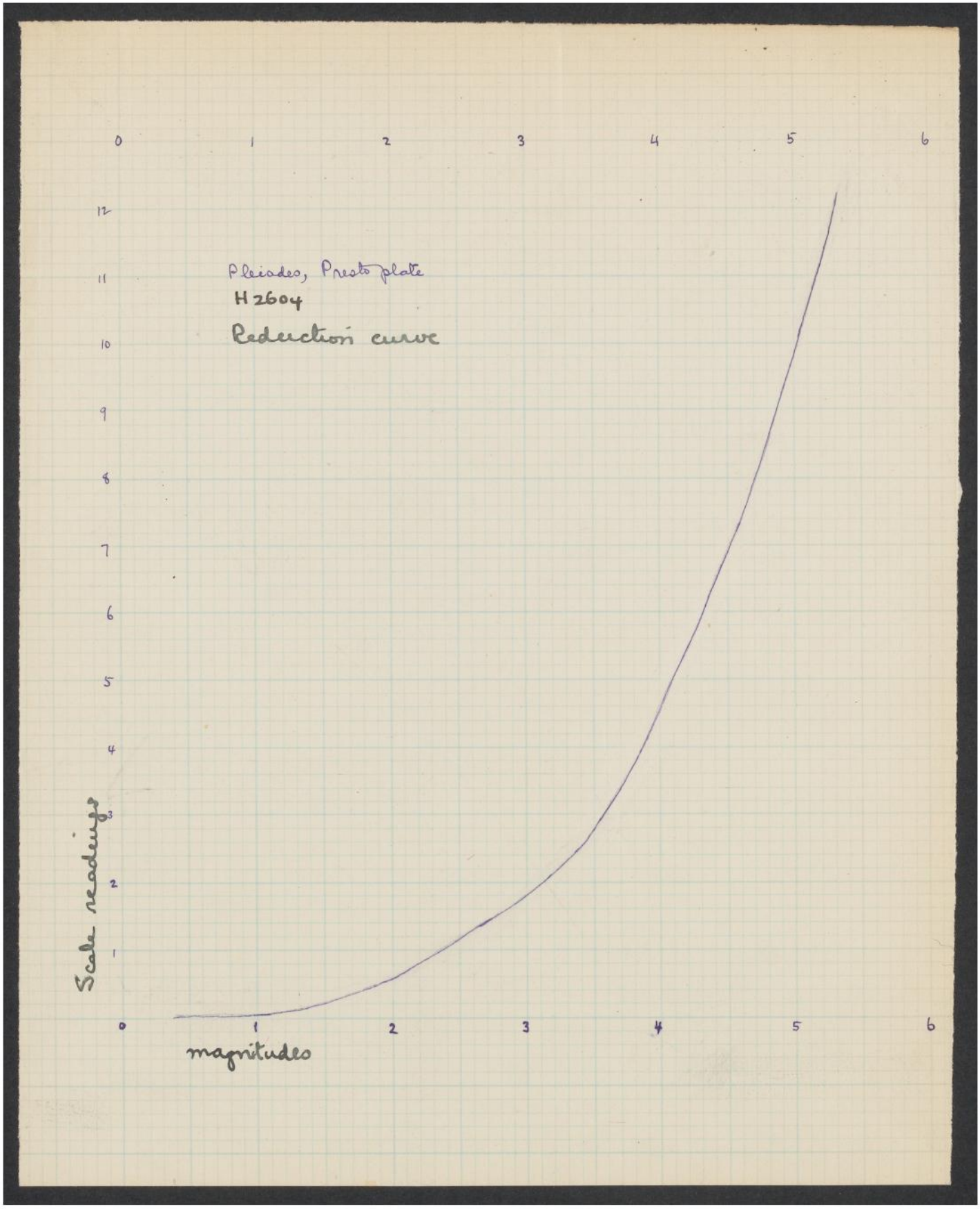
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5			6			7			Mean		11 mich 2 prism
[n]	[m+n]	Δm	[n]	[m+n]	Δm	[n]	[m+n]	Δm	Prism	Pan	
178	212	34	339	376	37	450	471	21	31	11	49
..	..	–	294	351	57	390	436	46	52	11	83
130	190	60	312	376	64	419	471	52	58	22	94
190	238	46	344	388	44	452	493	41	44	26	103
212	244	32	360	400	40	463	507	44	38	26	101
229	253	24	387	414	27	500	520	20	24	24	101
–	..	–	409	431	22	509	531	22	22	22	88
–	..	–	423	440	17	531	540?	09	13	14	122
–	–	–	–	–	–			–	–		

Mira and No. 6

Mira	6	Δm	Linie
2.2	1.7	344 − 260 +58	Hγ
4.3	2.0	393 − 312 +81	Hδ

58 81
25 7
83 88

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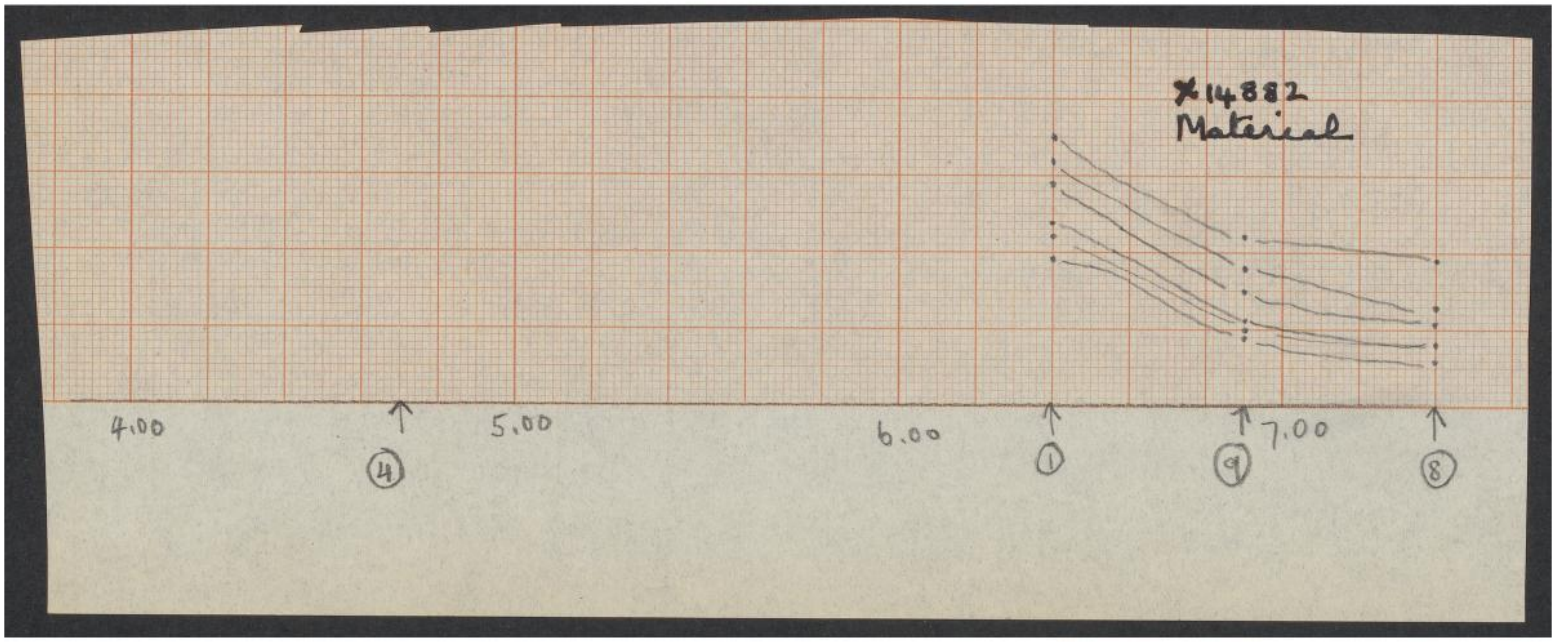
X-14882

l+m+n Reduced to ..4.2.

	#7								#6							
	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δm	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δm
1	34	35	43	32	33				—	—	—	—	—			
2	35	37	43	33	37				17	22	42	17	22			
3	39	40	43	37	38				—	—	—	—	—			
4	39	41	43	37	39				—	—	—	—	—			
5	40	41	43	38	39				—	—	—	—	—			
6	40	41	43	38	39				—	—	—	—	—			
7	39	41	43	37	39				30	34	42	30	34			
8	39	41	43	37	39				37	34	42	32	34			
8a	—	—	—	—	—				—	—	—	—	—			
9	39	41	43	37	39				28	32	42	28	32			
9a	—	—	—	—	—				—	—	—	—	—			
10	39	41	43	37	39				29	31	43	28	30			
11	37	40	43	35	38				21	26	43	20	25			
12	37	38	43	35	36				20	22	43	19	21			
13	30	33	43	29	31				12	15	43	11	14			
14	26	27	43	25	25				8	10	43	8	10			
15	19	22	43	18	21				3	6	43	3	6			
16	17	20	43	16	19											
17	13	16	43	12	15											

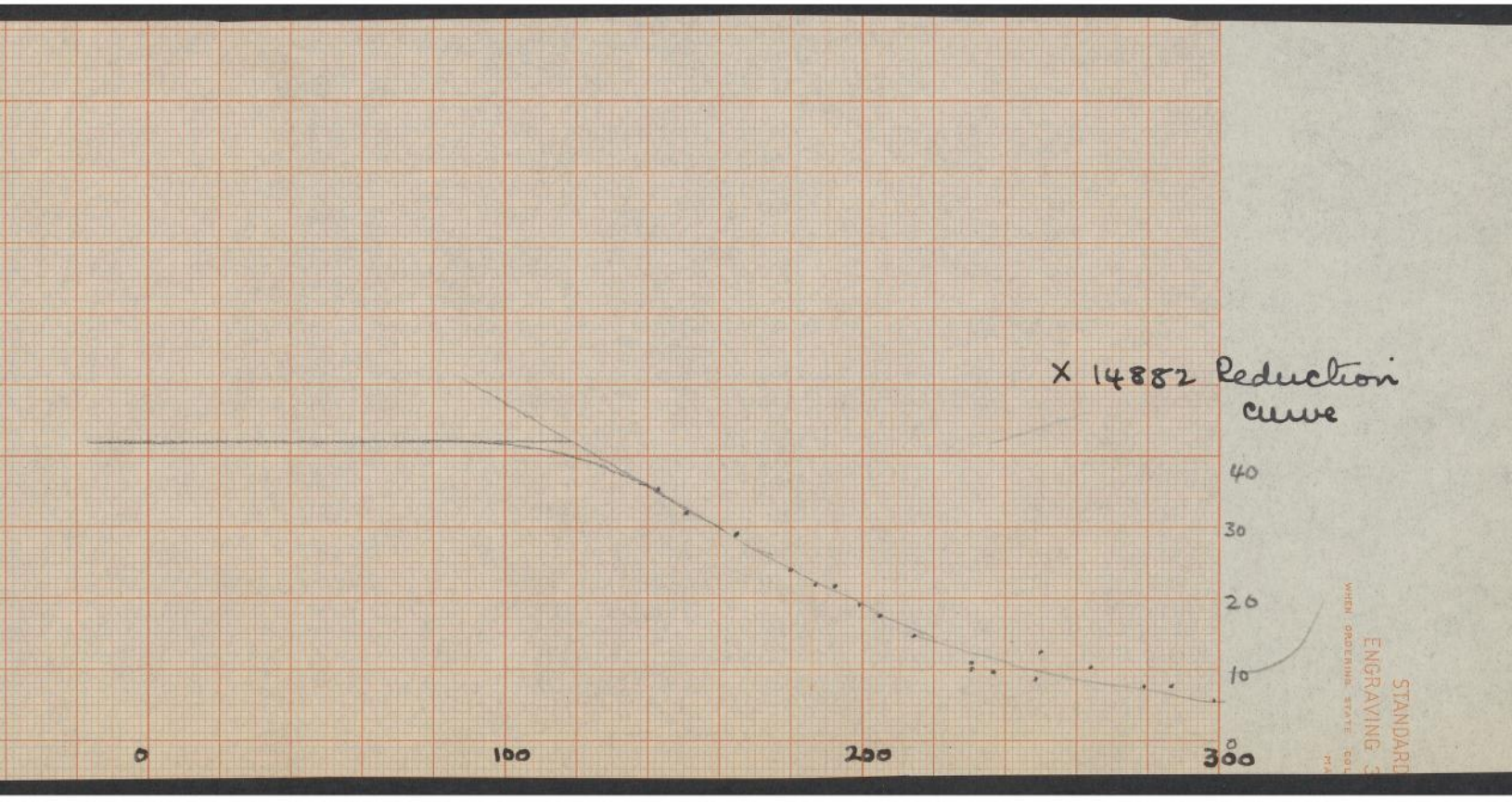
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#1 *

n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
–	–	–	–	–	–	–	–
19	22	42	19	22			
32	35	42	32	35			
32	35	42	32	35			
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
31	35	42	31	35			
31	34	42	31	34			
30	32	42	30	32			
27	32	42	27	32			
28	32	42	28	32			
26	29	42	26	29			
20	24	42	21	24			
18	19	42	18	19			
9	14	42	9	14			

#4 *

n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
22	24	40	23	25			

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	#9								#8							
	n	m+n	l+m+n	n̄	m+n	(n)	(m+n)	Δm	n	m+n	l+m+n	n̄	m+n	(n)	(m+n)	Δm
1	—	—	—						—	—	—					
2	7	10	43	7	10				5	8	42	5	8			
3	19	23	43	18	22				15	19	42	15	19			
4	19	23	43	18	22				16	19	42	16	19			
5	—	—	—	—	—				—	—	—	—	—			
6	—	—	—	—	—				16	18	42	16	18			
7	18	23	43	17	22				13	18	42	13	18			
8	19	21	43	18	20				13	15	42	13	15			
8a	16	19	43	15	18				12	14	42	12	14			
9	14	19	43	13	18				9	13	42	9	13			
9a	15	18	43	14	17				11	13	42	11	13			
10	13	16	43	12	15				9	11	42	9	11			
11	7	12	43	7	11				5	8	42	5	8			
12	7	9	43	7	9				4	6	42	4	6			
13																
14																
15																
16																
17																

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#12									#13								
n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm		n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
—	—	—							—	—	—					
4	7	41							1	3	43	1	3			
15	17	41							7	10	43	7	10			
16	18	41							8	11	43	8	11			
—	—	—							—	—	—	—	—			
—	—	—							—	—	—	—	—			
13	17	41							6	11	43	6	11			
—	—	—							—	—	—	—	—			
13	14	41							—	—	—	—	—			
9	14	41							5	9	43	5	9			
12	14	41							8	9	43	8	9			
10	12	41							6	8	43	6	8			
6	10	41							2	5	43	2	5			

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	# 3								# 2 Burned out							
	n	m t n	l t m t n	n̄	m t n	(n)	(m t n)	Δm	n	m t n	l t m t n	n̄	m t n	(n)	(m t n)	Δm
1	35	37	42	35	37				—	—	—	—	—	—	—	—
2	34	37	42	34	37				34	41	42	34	41	149	108	41
3	35	37	42	35	37				40	41	42	40	41			
4	34	37	42	34	37				39	41	42	39	41			
5	34	37	42	34	37				—	—	—	—	—			
6	35	37	42	35	37				—	—	—	—	—			
7	34	37	42	34	37				—	—	—	—	—			
8	32	36	42	32	36				—	—	—	—	—			
9	31	36	42	31	36				38	41	42	38	41			
10	34	36	42	34	36				—	—	—	—	—			
11	33	36	42	33	36				38	41	42	38	41			
12	34	36	42	34	36				—	—	—	—	—			
13	33	36	42	33	36				37	41	42	37	41			
14	33	36	42	33	36				38	41	42	38	41			
15	32	36	42	32	36				—	—	—	—	—			
16	33	36	42	33	36				39	41	42	39	41			
17	32	35	42	32	35				39	41	42	39	41			
18	24	35	42	24	35				39	41	42	39	41			
19	32	35	42	32	35				40	41	42	40	41			
20	29	35	42	29	35				39	41	42	39	41			
21	—	—	—	—	—	—	—	—	39	41	42	39	41			
22	31	34	42	31	34				37	41	42	37	41			
23	31	34	42	31	34				—	—	—	—	—			
24	32	34	42	32	34				36	40	42	36	40			
25	31	33	42	31	33				—	—	—	—	—			
26	32	33	42	32	33				—	—	—	—	—			
27	29	33	42	29	33				35	40	42	35	40			
28	31	32	42	31	32				38	40	42	38	40			
29	28	30	42	28	30				36	39	42	36	39			
30	27	29	42	27	29				35	37	42	35	37			

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#10

	n	mtn	ltmtn	ñ	m̄tn	(n)	(mtn)	Δ	m	mtn	ltmtn	ñ	m̄tn	(n)	(mtn)	Δm
1	30	21	42	30	21											
2	42	34	42	42	34											
3	40	34	42	40	34											
4	35	34	42	35	34											
5	37	34	42	37	34											
6	36	33	42	36	33											
7	34	32	42	34	32											
8	33	32	42	33	32											
9	34	32	42	34	32											
10	36	32	42	36	32											
11	33	30	42	33	30											
12	31	28	42	31	28											
13	34	28	42	34	28											
14	36	28	42	36	28											
15	33	27	42	33	27											
16	28	25	42	28	25											
17	23	21	42	23	21											
18	18	15	42	18	15											
19	14	11	42	14	11											
20	16	10	42	16	10											
21	10	9	42	10	9											

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		#3								#7							
		n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δ m	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δ m
	31	26	28	47	26	28				35	36	42					
	32	24	27	47	24	27				33	35	42					
	33	–	–	–	–	–	–	–	–	–	–	–					
H	34	2	25	42	2	25				6	31	42	290	156	134		
	35	5	20	47	5	20				–	–	–					
M	36	1	20	47	1	20				2	23	42					
	37	3	20	47	3	20				1	22	42					
										37a							
	38	13	17	47	13	17				11	20	42					
	39	11	15	47	11	15				11	15	42					
	40	4	13	47	4	13											

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Vega C18900 Reduced to 61

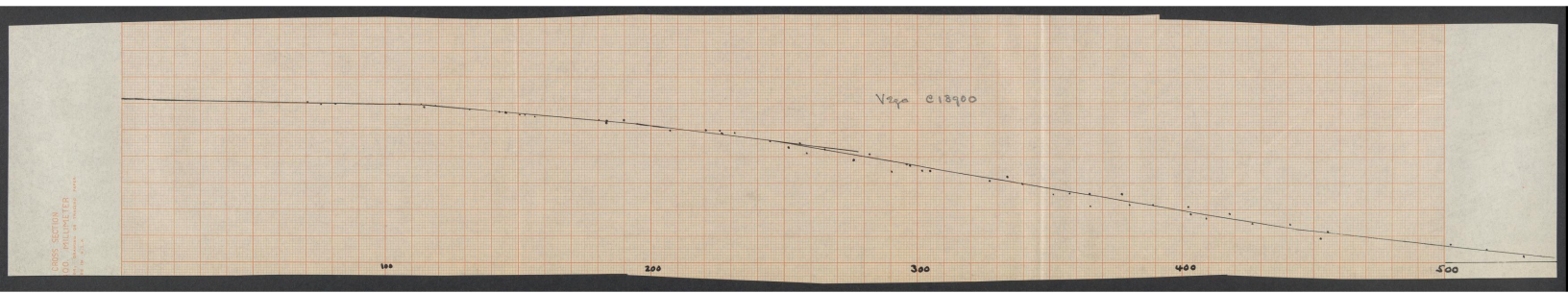
ap 4 #6

	m	m tn	l tn	n̄	m̄ tn	(m)	(m tn)	Am	m	m tn	l tn	n̄	m̄ tn	(m)	(m tn)	Am
β	59	64	65	56	61	152	35	(117)	47	59	63	46	57	251	143	108
γ	63	65	64	60	62	85	0	(85)	54	61	62	53	60	186	85	(101)
δ	61	65	64	58	62	130	0	(130)	51	61	62	50	60	213	85	(128)
ε	58	65	64	55	62	164	0	(164)	45	60	61	45	60	251	85	(166)
κ	–	–	–	–	–	–	–	–	57	59	61	57	59	143	118	(25)
ζ	52	64	64	49	61	220	35	(185)	37	57	61	37	57	297	143	154
η	43	61	64	41	58	274	130	144	26	50	61	26	50	363	213	150
θ	37	57	64	35	54	308	175	133	20	42	61	20	42	398	168	130
ι	33	52	64	31	49	333	220	113	18	35	61	18	35	410	308	102
κ	32	46	64	30	44	339	257	82	16	31	61	16	31	422	333	89
λ	30	41	64	29	39	344	286	58	15	26	61	15	26	428	363	65
μ	29	37	64	28	35	350	308	42	14	22	61	14	22	434	387	47
ν	27	33	64	26	31	363	333	30	13	19	61	13	19	440	403	37
ξ									12	17	61	12	17	450	416	34

ap. 10

β	22	39	62	22	38	387	292	95
γ	30	51	62	30	50	339	213	126
δ	26	50	62	26	49	363	220	143
ε	20	46	62	20	45	399	251	148
κ	38	43	61	38	43	292	262	30
ζ	9	37	61	9	37	475	297	178
η	7	26	61	7	26	494	363	131
θ	4	17	61	4	17	–	–	–
ι	3	12	61	3	12	–	450	
κ	2	9	61	2	9	–	–	
λ	2	7	61	2	7	–	–	
μ	1	5	60	1	5	–	–	

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#7 Op. 8

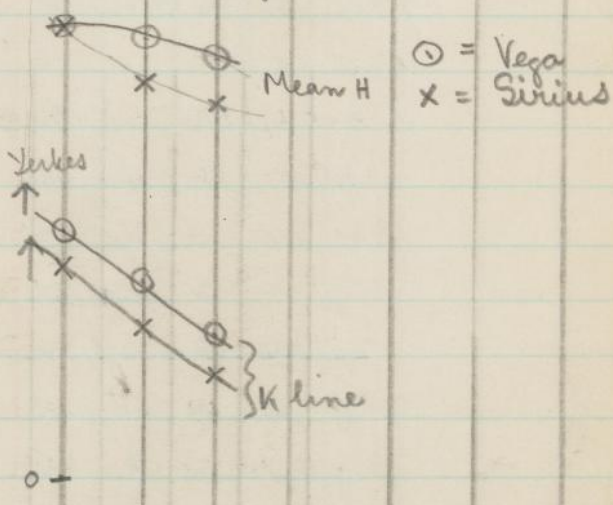
n	m+n	k+m+n	n̄	m+n	(n)	(m+n)	Δm
42	58	64	40	55	280	164	116
51	63	64	48	60	230	85	(145)
48	62	64	45	59	251	118	(133)
40	60	64	38	57	292	143	149
57	59	64	54	56	175	152	23
31	56	64	29	53	344	186	158
23	49	64	22	46	393	245	148
17	39	64	16	37	422	297	135
15	32	64	15	30	428	339	89
13	27	64	13	26	440	363	77
13	23	64	13	22	440	387	52
11	20	64	11	19	460	403	57

n	m+n	k+m+n	n̄	m+n	(n)	(m+n)	Δm
33	49	62	32	48	326	230	96
41	57	62	40	56	280	152	128
37	57	62	36	56	306	152	144
31	53	61	31	55	333	164	169
50	54	61	50	54	213	175	38
24	50	61	24	50	375	213	162
16	41	61	16	41	422	275	147
11	33	61	11	33	460	320	140
9	26	61	9	26	475	363	112
8	21	61	8	21	485	393	92
7	17	61	7	17	494	416	88
5	15	61	5	15	–	428	
6	12	61	6	12	–	–	
5	10	61	5	10	–	–	

Means (below 5q)

	4	6	7	8	10	Σ	Mean	dl
β		108	116	96	95	415	104	62
γ				128	126		127	69
δ				144	143		144	73
ε			149	169	148	466	155	76
κ			23	38	30	91	30	24
ζ		154	158	162	178	652	163	78
η	144	150	148	147	131	720	144	73
θ	133	130	135	140		538	134	71
ι	113	102	89	112		416	104	62
μ	82	89	77	92		340	85	54
λ	58	65	52	88		263	66	46
ν	42	47	57			146	49	36
ν	30	37					34	27

Data from H.C. 304



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X 14113

Reduced to A+m+n = .81

#1

	n	mtn	ltmtn	n̄	m̄tn	(n)	(mtn)	Δm
-1	15	19	86	14	18			
0	4	—	—	-	-			
1	11	28	86	10	27			
1a	—	—	—					
2	45	48	86	42	45			
2a	47	48	86	44	45			
2b	40	48	86	38	45			
3	42	48	86	40	45			
4	26	48	86	25	45			
4a	—	—	—	-	-			
4b	—	—	—	-	-			
5	38	43	86	36	41			
6	21	43	86	20	41			
7	30	40	86	28	38			
8	34	38	86	32	36			
9	12	32	86	11	30			
10	—	—	—	—	—			
11	3	16	86	3	15			
12	0	5	86	0	5			

#2

	n	mtn	ltmtn	n̄	m̄tn	(n)	(mtn)	Δm
	21	24	82	21	24			
	29	34	82	29	34			
	44	35	82	44	35			
	31	37	82	31	37			
	49	56	82	89	56			
	52	56	82	5	55			
	49	56	82	49	55			
	51	55	82	50	54			
	45	54	82	45	53			
	48	54	82	48	53			
	46	54	82	46	53			
	45	51	82	45	50			
	37	50	82	37	50			
	38	47	82	38	47			
	40	45	82	40	45			
	25	39	82	25	39			
	26	31	82	26	31			
	10	21	82	10	21			
	0	6	82	0	6			

#5

5	22	26	83	21	25			
6	9	26	83	9	25			
7	16	23	83	16	23			
8	19	22	83	19	21			
9	3	16	82	3	16			
10	—	—	—	-	-			
11	1	7	82	1	7			

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#4					#3				
15	20	82	15	20	13	20	81	13	20
21	24	82	21	24	17	22	81	17	22
13	28	82	13	28	20	25	81	20	25
–	–	–	–	–	26	31	81	26	31
48	51	82	48	50	27	32	81	27	32
49	51	82	49	50	31	35	81	31	35
42	51	82	42	50	34	39	81	34	39
46	51	82	46	50	33	41	81	33	41
31	51	82	31	50	39	43	81	39	43
–	–	–	–	–	41	45	81	41	45
–	–	–	–	–	45	49	81	45	49
41	47	82	41	47	44	52	81	44	52
25	46	82	25	46	48	56	81	48	56
32	42	82	32	42	46	57	81	46	57
36	40	82	36	40	52	59	81	52	59
16	24	82	16	24	51	62	81	51	62
22	26	82	22	26	61	65	81	61	65
6	16	82	6	16	62	65	81	62	65
1	6	82	1	6	63	68	81	63	68
					64	69	81	64	69
					67	70	81	67	70
					69	71	81	69	71
					67	72	81	67	72
					67	72	81	67	72
					67	72	81	67	72
					66	73	81	66	73
					70	74	81	70	74
					70	74	81	70	74
					(79) 71	74	81	71	74

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3

	m	m+m	l+m+m	m̄	m+m̄	(m)	(m+m)	Δm
30	72	75	81	72	75			
31	71	75	81	71	75			
32	72	75	81	72	75			
33	72	75	81	72	75			
34	71	75	81	71	75			
35	72	76	81	72	76			
36	73	76	81	73	76			
37	73	76	81	73	76			
38	71	76	81	71	76			
39	74	76	81	74	74			
40	72	76	81	72	76			
41	72	76	81	72	76			
42	72	76	81	72	76			
43	72	76	81	72	76			
44	72	76	81	72	76			
45	70	76	81	70	76			
46	73	76	81	73	76			
47	72	76	81	72	76			
48	70	76	81	70	76			
49	71	76	81	71	76			
50	73	76	81	73	76			
51	73	75	81	73	75			
52	71	75	81	71	75			
53	71	75	81	71	75			
54	71	75	81	71	75			
55	70	74	81	70	74			
56	71	74	81	71	74			
57	70	74	81	70	74			
58	67	73	81	67	73			

3

	m	m+m	l+m+m	m̄	m+m̄	(m)	(m+m)	Δm
	68	73	81	68	73			
(60)	65	73	81	65	73			
	65	73	81	65	73			
	69	73	81	69	73			
	70	73	81	70	73			
	71	73	81	71	73			
(65)	70	73	81	70	73			
	65	73	81	65	73			
	66	73	81	66	73			
	65	72	81	65	72			
	62	72	81	62	72			
(70)	57	72	81	57	72			
	60	71	81	60	71			
	61	71	81	61	71			
	60	71	81	60	71			
	58	71	81	58	71			
(75)	62	71	81	62	71			
	61	70	81	61	70			
	58	70	81	58	70			
	52	69	81	52	69			
	51	69	81	51	69			
(80)	60	69	81	60	69			
	58	69	81	58	69			
	55	69	81	55	69			
	45	68	81	45	68			
	56	67	81	56	67			
(85)	61	67	81	61	67			
	61	67	81	61	67			
	55	66	81	55	66			

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	#3								#3							
	n	m+n	k+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm	n	m+n	k+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
88	60	66	81						36	51	81					
89	58	66	81						35	50	81					
90	46	65	81						31	50	81					
91	59	65	81						(124) 29	50	81					
92	46	64	81						35	49	81					
93	58	64	81						36	49	81					
94	52	64	81						36	48	81					
95	37	63	81						32	48	81					
96	43	62	81						(125) 31	48	81					
97	39	62	81						29	47	81					
98	47	61	81						24	47	81					
99	38	61	81						34	46	81					
100	49	61	81						30	45	81					
101	50	61	81						(130) 32	45	81					
102	40	60	81						34	45	81					
103	40	59	81						31	44	81					
104	45	58	81						31	44	81					
105	41	58	81						33	44	81					
106	42	57	81						(135) 30	43	81					
107	41	56	81						31	43	81					
108	36	56	81						21	42	81					
109	22	55	81						32	41	81					
110	34	54	81						37	41	81					
111	42	53	81						(140) 38	41	81					
112	35	53	81						32	40	81					
113	32	52	81						31	40	81					
114	33	52	81						22	39	81					
115	35	52	81						27	38	81					
116	36	51	81						(145) 26	38	81					

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	n	mtn	(t+m)tn	$\bar{n}$	$\overline{mtn}$	(n)	(m)	Δm	n	(mtn)	(mtn)	$\bar{n}$	$\overline{mtn}$	(n)	(m+t)	Δm
146	22	36	81													
147	27	35	81													
148	29	35	81													
149	29	34	81													
150	20	33	81													
151	28	32	81													
152	20	31	81													
153	22	31	81													
154	22	29	81													
155	24	29	81													
156	26	28	81													
157	24	28	81													
158	20	27	81													
159	19	26	81													
160	17	24	81													
161	16	24	81													
162	18	23	81													
163	19	22	81													
164	16	22	81													
165	11	20	81													
166	6	18	81													
167	4	18	81													
168	1	17	81													
169	4	16	81													

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X-14939

3 B5 6.69 #2 A0 6.12

	n	mtn	ltmtn	$\bar{n}$	$\overline{mtn}$	$(\bar{n})$	(mtn)	Δm	n	mtn	ltmtn	$\bar{n}$	$\overline{mtn}$	$(\bar{n})$	(mtn)	Δm
0	25	28	60						33	36	61					
1	24	37	60						38	45	61					
1a	42	46	60						–	–	–					
2	50	54	60						54	56	61					
2a	52	54	60						54	56	61					
3	41	54	60						49	56	61					
3a	–	–	–						53	55	61					
3b	–	–	–						53	55	61					
4	50	53	60						51	54	61					
5	39	53	60						44	54	61					
6	46	52	59						49	51	61					
6a	48	51	59						49	58	61					
7	31	48	59						32	46	61					
7a	–	–	–						34	42	61					
8	17	33	59						23	32	61					
8a	–	–	–						18	22	61					
9	8	19	59						9	17	61					
10	4	10	59						5	10	61					
11	2	6	59						–	–	–					

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#7 6.64. Bo

0	24	26	63						7	11	63							
1	35	40	63						10	18	63							
≡ 1 4	52	55	62						31	37	63							
2	53	56	62						33	38	63							
2a	—	—	—						34	38	63							
3	52	55	62						28	38	63							
3a	—	—	—						—	—	—							
3 4	—	—	—						—	—	—							
4	—	—	—						32	35	63							
5	48	53	61						24	34	63							
6	47	50	60						26	31	64							
6a	—	—	—						26	30	64							
7	40	45	60						17	26	64							
7a	37	41	60						—	—	—							
8	26	31	60						8	14	64							
8a	—	—	—						—	—	—							
9																		
10																		
11																		

#13 7.6 B3

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	#1								#12							
	n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm	n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
0	7	9	60						9	13	63					
1	14	18	60						11	18	63					
≡ 1c	31	36	60						30	35	63					
2	32	35	60						–	–	–					
2a	–	–	–						–	–	–					
3	26	34	60						26	35	63					
3a	–	–	–						29	35	63					
3b	–	–	–						–	–	–					
4	–	–	–						32	35	63					
5	23	31	60						28	35	63					
6	24	27	60						31	34	63					
6a	–	–	–						–	–	–					
7	15	23	60						21	29	63					
7a	–	–	–						19	25	63					
8	6	11	60						13	19	63					
8a	–	–	–						–	–	–					
9																
10																
11																

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#4								#11							
α	m tn	t m tn	n̄	m tn	(n)	(m tn)	Δm	n	m tn	t m tn	n̄	m tn	(n)	(m tn)	Δm
								–	–	–					
								18	21	63					
								39	41	63					
–	–	–	–	–	–	–	–	–	–	–					
–	–	–	–	–	–	–	–	–	–	–					
18	55	62						36	42	63					
–								17	41	63					
–								–							
–								–							
25	57	62						32	39	63					
–	–	–						31	36	63					
–	–	–						–							
19	52	62						21	28	63					
41	46	62						17	22	63					
9	34	62													
~~#~~	–	–													
9	15	62													

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6 B3 8-9

10

	n	m+n	l+m+n	$\bar{n}$	m+n	(n)	(m+n)	Δm	n	m+n	l+m+n	$\bar{n}$	m+n	(n)	(m+n)	Δm
0	–	–	–													
1	–	–	–													
1½	10	14	59													
2	14	19	59						–	–	–	–	–	–	–	
2a	–	–	–						30	33	62					
3	12	19	59						28	33	62					
3a	16	19	59						–	–	–					
3b	–	–	–						–	–	–					
4	–	–	–						25	31	62					
5	11	19	59						26	31	62					
6	12	16	59						26	30	62					
6a	–	–	–						–							
7	9	12	59						–							
7a	9	10	59						–							
8	–	–	–						–							
8a									–							
9									12	15	62					
10									6	10	62					
11																

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	#14 6.48								#8 6.64							
	n	n+m	l+m+n	$\bar{n}$	$\bar{n}+\bar{m}$	(n)	(n+m)	Δ_m	n	n+m	l+m+n	$\bar{n}$	$\bar{n}+\bar{m}$	(n)	(n+m)	Δ_m
1	43	35	62						44	33	62					
2	60	51	62						60	50	62					
3	57	52	62						58	51	62					
4	53	52	62						54	52	62					
5	54	57	62						54	52	62					
6	55	53	62						55	52	62					
7	55	52	62						55	50	63					
8	57	51	62						53	48	63					
9	40	44	62						38	42	64					
10	34	43	62						33	37	64					
11	34	36	63						34	35	64					

	#15							
2	10	13	62					
2a	12	14	62					
3	10	14	62					
5	11	16	62					
7	13	16	62					
8	11	13	62					
9	5	9	62					
10	2	5	62					

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#5

	n	m+m	l+m+m	$\bar{n}$	$\bar{m}+\bar{m}$	(n)	$(m+m)$	Δm	n	m+m	l+m+m	$\bar{n}$	$\bar{m}+\bar{m}$	(n)	$(m+m)$	Δm
1	19	1	63						(31) 43	16	63					
	5	4	63						38	16	63					
	8	5	63						35	16	63					
	8	6	63						24	16	63					
5	30	6	63						(35) 40	16	63					
	15	8	63						26	16	63					
	26	8	63						36	16	63					
	55	9	63						42	16	63					
	34	11	63						42	16	63					
10	14	11	63						(40) 20	16	63					
	22	12	63						18	15	63					
	15	13	63						55	15	63					
	36	13	63						18	15	63					
	16	13	63						21	15	63					
15	18	13	63						(45) 22	15	63					
	16	14	63						32	15	63					
	17	14	63						31	15	63					
	17	14	63						57	15	63					
	25	14	63						48	15	63					
20	26	14	63						(50) 51	15	63					
	32	15	63						30	14	63					
	40	15	63						37	14	63					
	25	15	63						25	14	63					
	22	16	63						34	14	63					
25	48	16	63						(55) 21	14	63					
	25	16	63						55	14	63					
	41	16	63						42	14	63					
	41	16	63						17	13	63					
	25	16	63						19	13	63					

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	n	m+n	l+m+n	$\bar{n}$	$m\bar{n}$	(n)	(m+n)	Δm								
61	40	11	63					(11)	12	5	63					
	15	11	63						8	5	63					
	13	11	63						12	4	63					
	14	11	63						19	4	63					
65	16	11	63					(95)								
	16	11	63													
	20	11	63													
	13	10	63													
	35	10	63													
70	27	10	63					(100)								
	14	10	63													
	14	10	63													
	16	10	63													
	15	10	63													
75	17	10	63					(65)								
	22	10	63													
	35	10	63													
	12	10	63													
	12	9	63													
80	16	9	63					(110)								
	26	9	63													
	10	8	63													
	10	8	63													
	11	8	63													
85	12	7	63					(115)								
	12	7	63													
	10	7	63													
	10	6	63													
	9	6	63													
	10	5	63					(121)								

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	n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm		n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
1	58	61	62						(31)	35	55	62					
	58	61	62							48	55	62					
	59	61	62							37	54	62					
	59	61	62							35	54	62					
5	57	61	62						(35)	42	53	62					
	54	61	62							38	53	62					
	56	61	62							41	53	62					
	56	61	62							46	53	62					
	54	61	62							44	52	62					
10	57	60	62						(40)	41	52	62					
	56	60	62							39	52	62					
	54	60	62							15	52	62					
	48	60	62							33	51	62					
	56	60	62							42	50	62					
15	55	59	62						(45)	36	50	62					
	53	59	62							33	50	62					
	47	59	62							33	50	62					
	52	59	62							37	49	62					
	56	59	62							36	49	62					
20	56	59	62						(50)	37	49	62					
	53	58	62							33	48	62					
	55	58	62							29	48	62					
	45	58	62							36	48	62					
	55	58	62							38	48	62					
25	44	58	62						(55)	40	47	62					
	54	58	62							35	47	62					
	50	57	62							34	47	62					
	36	57	62							25	46	62					
	39	56	62							30	45	62					
	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]	[illegible]					

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(6)	32	44	62					
	36	44	62					
	32	44	62					
	34	44	62					
65	24	43	62					
	33	43	62					
	38	43	62					
	34	42	62					
	33	42	62					
70	19	41	62					
	25	41	62					
	29	40	62					
	21	39	62					
	27	39	62					
75	29	38	62					
	29	37	62					
	17	37	62					
	30	36	62					
	17	35	62					
80	20	34	62					
	24	32	62					
	27	31	62					
	28	30	62					
	24	29	62					
85	20	27	62					
	17	23	62					
	15	20	62					
	10	16	62					
89	0	13	62					
90	0	7	62					

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C - 18592

Reduced to 40

#1

	m	m to m	l to m	n	n to m	(m)	(m to n)	Δm
β	32	36	43	20	89			
γ	37	41	43	24	38			
δ	34	41	43	22	36			
ε	30	39	43	28	36			
ζ	25	36	43	23	33			
η	20	31	43	19	29			
θ	16	26	43	15	24			
ι	15	23	43	14	21			
κ	13	21	43	12	20			
λ	13	18	43	12	17			
μ	11	15	43	10	14			
ν	10	14	43	9	13			

#2

	m	m to m	l to m	n	n to m	(m)	(m to n)	Δm
β	16	22	40	16	22			
γ	24	32	40	24	32			
δ	21	31	40	21	31			
ε	16	28	40	16	28			
ζ	11	23	40	11	23			
η	8	18	40	8	18			
θ	6	14	40	6	14			
ι	5	11	40	5	11			
κ	4	9	40	4	9			
λ	3	7	40	3	7			
μ	4	6	40	4	6			
ν	–	–	–	–	–			

#3

	m	m to m	l to m	n	n to m	(m)	(m to n)	Δm
β	3	18	41	3	18			
γ	19	29	41	19	28			
δ	16	27	42	15	26			
ε	12	23	42	11	22			
ζ	10	19	42	10	18			
η	7	15	42	7	14			
θ	6	12	42	6	11			
ι	4	10	42	4	10			
κ	4	9	42	4	9			
λ	–	–	–	–	–			
μ								
ν								

#4

	m	m to m	l to m	n	n to m	(m)	(m to n)	Δm
β	15	22	42	14	21			
γ	20	29	42	19	28			
δ	19	28	42	18	27			
ε	14	25	42	13	24			
ζ	5	20	41	5	20			
η	6	15	41	6	15			
θ	4	12	41	4	12			
ι	3	9	41	3	9			
κ	3	7	41	3	7			
λ	2	6	41	2	6			
μ	1	5	41	1	5			
ν	–	–	–	–	–			

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#5 #

	W	min	Hours	$\overline{W}$	$\overline{min}$	(n)	(min)	Δm	W	min	Hours	$\overline{W}$	$\overline{min}$	(n)	(min)	Δm
β	11	19	40	11	19											
γ	18	28	40	18	28											
δ	15	26	40	15	26											
ε	12	23	40	12	23											
ζ																
η	4	12	40	4	12											
θ	3	9	40	3	9											
ι	2	8	40	2	8											
κ	2	6	40	2	6											
λ	0	4	40	0	4											
μ	0	4	40	0	4											
ν																

#4 Repeated

β	3	9	44	3	8											
γ	8	16	44	7	15											
δ	7	16	44	6	15											
ε	6	14	44	5	13											
ζ	3	10	44	3	9											
η	2	7	44	2	6											
θ	2	6	44	2	5											
ι	1	5	44	1	5											
κ	—	—	—	—	—											
λ	—	—	—	—	—											
μ	—	—	—	—	—											
ν	—	—	—	—	—											

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1924phae.proj.1102P

C-18600 Pleiades + Mira

Reduced to 40

	#1								#2							
	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δm	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δm
β	29	32	34	31	34				17	25	38	18	26			
γ	35	36	36	37	38				29	35	38	31	37			
δ	34	37	37	36	39				27	35	38	28	37			
ε	32	36	38	34	38				22	33	38	23	35			
ζ	29	35	38	31	37				17	29	38	18	31			
η	23	33	38	24	35				12	24	38	13	25			
θ	20	30	38	21	31				9	20	38	9	21			
ι	18	27	39	18	28				7	16	38	7	17			
κ	17	24	39	17	25				6	14	38	6	15			
λ	16	21	39	16	22				6	11	38	6	12			
μ	15	19	39	15	19				5	9	38	5	9			
ν	12	16	39	12	16				4	8	38	4	8			

	#3								#4							
	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δm	n	m+n	l+m+n	$\bar{n}$	$\bar{m+n}$	(n)	(m+n)	Δm
β	25	30	39	26	31				—	—	—					
γ	33	37	39	34	38				—	—	—					
δ	29	36	39	30	38				26	34	40	26	34			
ε	25	34	39	26	35				22	32	40	22	32			
ζ	20	30	39	21	31				15	27	40	15	27			
η	15	25	39	15	26				11	21	39	11	22			
θ	11	21	39	11	22				9	17	39	9	17			
ι	10	18	39	10	18				7	15	39	7	15			
κ	10	15	39	10	15				7	12	39	7	12			
λ	8	13	39	8	13				6	10	39	6	10			
μ	8	11	39	8	11				—	—	—					
ν	—	—	—	—	—				—	—	—					

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	#5								Repeated #4							
	N	min	Hours	$\bar{N}$	min	(N)	(min)	Δm	N	min	Hours	$\bar{N}$	min	(N)	(min)	Δm
β	3	10	40	3	10											
γ	10	20	41	10	20				24	33	45	21	29			
δ	9	20	41	9	20				20	30	45	18	27			
ε	6	18	41	6	18				15	26	45	13	23			
ζ	4	12	41	4	12				10	20	44	9	18			
η	1	7	41	1	7				5	14	44	4	12			
θ	1	5	41	1	5				6	11	44	5	10			
ι	0	3	41	0	3				—	—	—	—	—			
κ	—	—	—	—	—				—	—	—	—	—			
λ	—	—	—	—	—				—	—	—	—	—			
μ	—	—	—	—	—				—	—	—	—	—			
ν	—	—	—	—	—				—	—	—	—	—			

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C – 1846

Reduced to 20

#1

	w	mtn	ttt	$\overline{w}$	$\overline{mtn}$	(w)	(mtn)	Δm
β	25	28	30	25	28			
γ	29	30	30	29	30			
δ	28	30	30	28	30			
ε	26	30	30	26	30			
ξ	24	29	30	24	29			
η	21	28	30	21	28			
θ	18	26	30	18	26			
ι	17	24	30	17	24			
κ	16	22	30	16	22			
λ	15	20	30	15	20			
μ								
ν								

#2

	w	mtn	ttt	$\overline{w}$	$\overline{mtn}$	(w)	(mtn)	Δm
β	15	21	30	15	21			
γ	23	28	30	23	28			
δ	20	27	30	20	27			
ε	16	26	30	16	26			
ξ	12	23	30	12	23			
η	8	18	30	8	18			
θ	6	15	30	6	15			
ι	4	12	30	4	12			
κ	5	10	30	5	10			
λ	4	8	30	4	8			
μ								
ν								

#3

	w	mtn	ttt	$\overline{w}$	$\overline{mtn}$	(w)	(mtn)	Δm
β	18	23	30	18	23			
γ	24	28	30	24	28			
δ	22	28	30	22	28			
ε	19	27	30	19	27			
ξ	16	25	30	16	25			
η	12	21	30	12	21			
θ ϑ	10	18	30	10	18			
ι ϰ	9	15	30	9	15			
κ ϰ	8	13	30	8	13			
λ ϰ	7	11	30	7	11			
μ ϰ	—	—	—	—	—			
ν —	—	—	—	—	—			

#4

	w	mtn	ttt	$\overline{w}$	$\overline{mtn}$	(w)	(mtn)	Δm
β	11	17	29	11	18			
γ	19	25	29	20	26			
δ	17	25	29	18	26			
ε	13	23	29	13	24			
ξ	9	19	30	9	19			
η	5	14	30	5	14			
θ ϑ	3	10	30	3	10			
ι ϰ	2	8	30	2	8			
κ ϰ	1	6	30	1	6			
λ ϰ	0	5	30	0	5			
μ ϰ	—	—	—	—	—			
ν —	—	—	—	—	—			

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1924phae.proj.1102P

	# 5								# 4 Repeated							
	m	mtn	(hours)	n	mtn	(n)	(mtn)	AM	m	mtn	(hours)	n	mtn	(n)	(mtn)	AM
β	6	12	29	6	12				13	19	30	13	19			
γ	12	21	30	12	21				21	27	30	21	27			
δ	11	21	31	11	20				20	27	31	19	26			
ε	9	18	32	8	17				16	25	31	15	24			
ζ	7	14	32	7	18				13	22	32	12	21			
η	4	10	32	4	9				9	18	32	8	17			
θ	4	7	33	4	6				6	14	32	6	13			
ι	3	6	33	3	5				4	11	32	4	10			
κ	1	4	33	−1	4				4	9	32	4	8			
λ									3	7	32	3	7			
μ																
ν																

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1924phae.proj.1102P

C 18655

#1

	n	mtn	ltn tn	$\bar{w}$	mtn	(w)	(mtn)	Δm
β	23	26	28	29	35			
γ	27	28	28	34	35			
δ	26	29	29	31	35			
ε	25	28	29	30	34			
ζ	23	27	29	28	33			
η	20	26	30	23	30			
θ	16	23	30	19	27			
ι	15	22	30	18	26			
κ	14	20	30	16	23			
λ	13	17	30	15	20			
μ	12	15	30	14	18			
ν								

#2 Reduced to 35

	w	mtn	ltn tn	$\bar{w}$	mtn	(w)	(mtn)	Δm
β	16	22	32	18	24			
γ	25	30	32	27	33			
δ	22	30	33	23	32			
ε	19	28	33	20	30			
ζ	15	24	33	16	25			
η	12	20	33	13	21			
θ	9	16	33	10	17			
ι	8	14	33	8	15			
κ	8	13	33	8	14			
λ	7	12	33	7	13			
μ	6	10	33	6	11			
ν								

#3

β	20	24	32	22	26			
γ	28	31	33	30	33			
δ	26	31	34	27	32			
ε	23	31	35	23	31			
ζ	19	28	35	19	28			
η	14	24	35	14	24			
θ	10	20	35	10	20			
ι	9	17	36	9	17			
κ	8	15	36	8	15			
λ	8	12	36	8	12			
μ	—	—	—					
ν	—	—	—					

#4

β	11	15	30	13	18			
γ	19	25	31	21	28			
δ	17	25	31	19	28			
ε	15	24	32	16	26			
ζ	11	20	32	12	22			
η	9	16	32	10	18			
θ	7	13	32	8	14			
ι	5	11	32	5	12			
κ	5	9	32	5	10			

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1924phae.proj.1102P

	# 5								# 4 Repeat							
	n	mtn	ltmtn	$\overline{n}$	$\overline{mtn}$	(n)	(mtn)	Δm	n	mtn	ltmtn	$\overline{n}$	$\overline{mtn}$	(n)	(mtn)	Δm
β	6	10	32	7	11				12	16	32	13	18			
γ	12	18	35	12	18				20	27	32	22	30			
δ	11	20	37	10	19				18	27	32	20	30			
ε	10	18	38	9	17				15	24	32	16	26			
ζ	7	15	38	6	14				10	19	32	11	21			
η	4	10	38	4	9				7	14	32	8	15			
θ	4	8	38	4	7				4	10	32	4	11			
ι	—	—	—	—	—				2	8	32	2	9			
κ	—	—	—	—	—				2	6	32	2	7			
λ	—	—	—	—	—				1	4	32	1	4			
μ	—	—	—	—	—				—	—	—	—	—			
ν	—	—	—	—	—											

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1924phae.proj.1132P

c 18679

Reduced to 60.

#1

	n	mtu	Imtu	$\bar{n}$	$\bar{m}$tu	(n)	(mtu)	Δm
β	44	50	56	47	53			
γ	52	55	57	55	58			
δ	50	55	58	52	57			
ε	45	55	58	47	57			
ζ	37	52	59	38	53			
η	28	45	59	28	46			
θ	22	38	59	22	39			
ι	20	34	59	20	35			
κ	18	29	59	18	30			
λ	15	25	59	15	25			
μ	15	20	59	15	20			
ν								

#2

	n	mtu	Imtu	$\bar{n}$	$\bar{m}$tu	(n)	(mtu)	Δm
β	25	37	63	24	35			
γ	40	53	63	38	50			
δ	33	51	62	32	49			
ε	25	47	62	24	45			
ζ	18	38	62	17	37			
η	13	29	62	13	28			
θ	9	22	62	9	21			
ι	8	18	61	8	18			
κ	7	16	61	7	16			
λ	7	13	61	7	13			
μ	—	—	—					
ν	—	—	—					

#3

	n	mtu	Imtu	$\bar{n}$	$\bar{m}$tu	(n)	(mtu)	Δm
β	26	38	58	27	39			
γ	41	51	58	42	53			
δ	39	51	56	38	53			
ε	28	46	57	30	48			
ζ	20	39	57	21	41			
η	13	29	57	14	31			
θ	9	22	57	9	23			
ι	8	18	57	8	19			
κ	7	13	57	7	14			
λ	6	10	57	6	11			
μ	—	—	—	—	—			
ν	—	—	—	—	—			

#4

	n	mtu	Imtu	$\bar{n}$	$\bar{m}$tu	(n)	(mtu)	Δm
β	18	30	64	17	28			
γ	33	49	64	31	46			
δ	30	49	64	28	46			
ε	21	42	63	20	40			
ζ	14	31	63	13	30			
η	9	22	63	9	21			
θ	7	18	63	7	17			
ι	5	14	63	5	13			
κ	5	10	63	5	10			
λ	—	—	—					
μ	—	—	—					
ν	—	—	—					

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	#5								#4 repeat.							
	n	mtn	Ltutu	n	mtn	(n)	(mtn)	4m	n	mtn	Ltutu	n	mtn	(n)	(mtn)	4m
β	6	12	64						17	28	63	16	27			
γ	12	26	65						22	47	63	20	45			
δ	10	25	65						28	46	63	27	44			
ε	9	21	64						21	41	63	20	39			
ζ	6	15	66						15	32	63	14	30			
η	3	10	67						10	23	63	10	22			
θ	2	6	67						7	17	63	7	16			
ι	–	–	–						7	19	63	7	12			
κ	–	–	–						6	12	63	6	11			
λ	–	–	–						5	10	63	5	10			
μ	–	–	–						–	–	–					
ν	–	–	–						–	–	–					

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1924phae.proj.1102P

Reduced to 40

C 18689 # 1 #2

	n	mtn	Hmtn	w	mtn	w	mtn	Δm	w	mtn	tu tmtn	w	mtn	w	mtn	Δm
β	36	39	40	36	39				22	31	41	21	30			
γ	40	41	41	39	40				32	38	41	31	37			
δ	39	42	42	37	40				28	37	41	27	36			
ε	37	42	43	34	39				22	35	40	22	35			
ζ	32	40	43	30	37				15	30	40	15	30			
η	26	37	43	24	34				11	22	40	11	22			
θ	22	33	43	20	31				8	18	40	8	18			
ι	19	29	43	18	27				8	14	40	8	14			
κ	18	26	43	17	24				7	12	40	7	12			
λ	17	22	43	16	20				7	10	40	7	10			
μ	15	18	43	14	17				-	-	-	-	-			
ν	-	-	-	-	-				-	-	-	-	-			

3 #4

β	26	33	42	25	31				17	26	41	17	25			
γ	35	40	42	33	38				27	35	41	26	34			
δ	32	40	42	30	38				23	34	41	22	33			
ε	27	38	42	26	36				19	32	40	19	32			
ζ	21	34	42	20	32				14	25	40	14	25			
η	16	28	42	15	27				9	19	40	9	19			
θ	12	23	41	12	22				7	15	40	7	15			
ι	11	19	41	11	19				5	11	40	5	11			
κ	10	16	41	10	16				4	10	40	4	10			
λ	9	13	41	9	13				5	8	40	5	8			
μ	7	10	41	7	10				-	-	-	-	-			
ν	-	-	-	-	-				-	-	-	-	-			

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1924phae.proj.1102P

#5

	w	mtn	ltum	$\bar{w}$	$\bar{mtn}$	(n)	(mtn)	Δm
β	5	11	43	5	10			
γ	9	19	43	8	18			
δ	7	18	43	7	17			
ε	6	15	43	6	14			
ζ	5	12	43	5	11			
η	3	7	43	3	7			
θ	2	6	43	2	6			
ι	2	5	43	2	5			
κ	—	—	—	—	—			
λ	-	-	-	-	-			
μ	-	-	-	-	-			
ν	-	-	-	-	-			

#3 Repeated

	w	mtn	ltum	$\bar{w}$	$\bar{mtn}$	(n)	(mtn)	Δm
β	24	32	42	23	30			
γ	32	38	41	31	37			
δ	29	38	41	28	37			
ε	24	35	40	24	35			
ζ	18	31	40	19	31			
η	13	24	40	13	24			
θ	10	20	40	10	20			
ι	9	17	40	9	17			
κ	8	14	40	8	14			
λ	7	11	40	7	10			
μ	—	—	—	-	-			
ν	—	—	-	—	-			

Mira

	w	mtn	ltum	$\bar{w}$	$\bar{mtn}$	(n)	(mtn)	Δm
β								
γ								
δ								
ε								
ζ								
η								
θ								
ι								
κ								
λ								
μ								
ν								

#4 Repeated

	w	mtn	ltum	$\bar{w}$	$\bar{mtn}$	(n)	(mtn)	Δm
β	14	23	40	14	23			
γ	23	32	40	23	32			
δ	20	32	40	20	32			
ε	15	29	40	15	29			
ζ	11	23	40	11	23			
η	8	16	40	8	16			
θ	6	12	40	6	12			
ι	4	10	40	4	10			
κ	4	9	40	4	9			
λ	—	—	—	—	—			
μ	-	—	—	—	—			
ν	—	—	—	—	—			

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1924phae.proj.1102P

Reduced to 45

C 1869 5

#1

	n	mtn	Hautn	$\bar{n}$	$\bar{m}tn$	(n)	(mtn)	dm
β	31	36	42	33	39			
γ	37	41	42	40	44			
δ	35	41	42	38	44			
ε	32	40	42	34	43			
ζ	27	37	42	29	40			
η	21	32	42	22	34			
θ	16	28	42	17	30			
ι	14	24	42	15	26			
κ	15	21	42	16	22			
λ	13	18	42	14	19			
μ	11	15	42	12	16			
ν	–	–	–					

#2

	n	mtn	Hautn	$\bar{n}$	$\bar{m}tn$	(n)	(mtn)	dm
β	17	24	41	19	26			
γ	15	23	41	16	36			
δ	22	33	41	24	36			
ε	16	30	41	18	33			
ζ	12	24	41	13	26			
η	7	15	41	8	16			
θ	8	15	41	9	16			
ι	5	12	41	5	18			
κ	6	10	41	7	11			
λ	5	10	41	5	11			
μ	4	9	41	4	10			
ν	–	–	–					

#3

	n	mtn	Hautn	$\bar{n}$	$\bar{m}tn$	(n)	(mtn)	dm
β	19	27	41	21	30			
γ	18	26	41	20	29			
δ	26	36	42	28	39			
ε	22	34	42	24	36			
ζ	18	29	42	19	31			
η	13	24	43	14	25			
θ	9	19	43	9	20			
ι	9	17	43	9	18			
κ	8	13	43	8	14			
λ	8	11	43	8	12			
μ	6	10	43	6	10			
ν	–	–	–					

#4

	n	mtn	Hautn	$\bar{n}$	$\bar{m}tn$	(n)	(mtn)	dm
β	18	26	43	19	27			
γ	26	35	43	27	37			
δ	23	35	43	24	37			
ε	19	32	42	20	33			
ζ	14	27	43	15	28			
η	8	20	43	9	21			
θ	6	16	43	6	17			
ι	8	15	42	9	16			
κ	7	12	42	8	13			
λ	6	10	42	6	11			
μ	6	9	42	6	10			
ν	–	–	–					

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1924phae.proj.1102P

#5

	x	mtn	Hmtn	$\bar{x}$	mtn	(x)	(mtn)	4m	w	mtn	Hmtn	$\bar{x}$	mtn(x)	(mtn)	4m
β	4	11	45	4	11										
γ	10	20	45	10	20										
δ	7	19	45	7	19										
ε	7	17	45	7	17										
ζ	6	12	45	6	12										
η	3	8	45	3	8										
θ	2	7	45	2	7										
ι	–	–	–												
κ	–	–	–												
λ	–	–	–												
μ															
ν															

4 repeated

β	13	21	41	14	23										
γ	22	31	41	24	34										
δ	20	30	41	22	33										
ε	15	27	42	16	29										
ζ	10	22	42	11	24										
η	5	15	42	5	16										
θ	4	11	42	4	12										
ι	3	9	42	3	8										
κ	1	7	42	1	6										
λ	1	6	42	1	6										
μ															
ν															

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C 18706

#1

	h	min	tenth	±	unit	(u)	(tenth)	Obs
β	39	41	42					
γ	40	42	42					
δ	39	41	42					
ε	38	41	42					
ζ	35	40	42					
η	29	38	42					
θ	26	35	42					
ι	24	33	42					
κ	23	30	42					
λ	22	27	42					
μ	–	–	–					
ν	–	–	–					

#2

	h	min	tenth	±	unit	(u)	(tenth)	Obs
β	18	25	34					
γ	28	34	36					
δ	25	34	37					
ε	22	33	38					
ζ	17	30	39					
η	12	24	34					
θ	10	20	40					
ι	9	17	40					
κ	9	15	40					
λ	9	13	40					
μ	8	12	40					
ν	8	11	40					

#3

	h	min	tenth	±	unit	(u)	(tenth)	Obs
β	26	34	44					
γ	39	43	46					
δ	38	45	47					
ε	33	45	48					
ζ	28	41	48					
η	22	35	49					
θ	18	31	49					
ι	15	27	49					
κ	15	22	49					
λ	14	20	49					
μ	–	–	–					
ν	–	–	–					

#4

	h	min	tenth	±	unit	(u)	(tenth)	Obs
β	7	13	25					
γ	18	25	29					
δ	18	27	32					
ε	14	26	34					
ζ	10	22	36					
η	6	16	37					
θ	3	12	37					
ι	4	9	38					
κ	3	7	38					
λ	–	–	–					
μ	–	–	–					
ν	–	–	–					

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1924phae.proj.1102P

5

	n			u		u		Δu	u	mean	(true)	u		(n)	(mean)	(Δ)
β	5	10	35													
γ	10	19	40													
δ	9	21	43													
ε	8	20	45													
ζ	5	15	47													
η	2	11	48													
θ	3	7	48													
ι	2	5	49													
κ	2	5	49													
λ	–	–	–													
μ	–	–	–													
ν	–	–	–													

4 Repeated.

β	15	21	34														
γ	26	32	37														
δ	25	34	40														
ε	21	33	41														
ζ	17	29	42														
η	12	22	43														
θ	8	18	43														
ι	8	15	44														
κ	8	13	44														
λ	–	–	–														
μ	–	–	–														
ν	–	–	–														

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1924phae.proj.1102P

Reduced to 35

C 18716

#1

	m	mtn	ltuth	m	mtn	m	mtn	Δm
β	31	33	34	32	34			
γ	33	34	34	34	35			
δ	32	34	34	33	35			
ε	31	34	34	32	35			
ζ	28	33	34	29	34			
η	24	31	34	25	32			
θ	20	29	34	21	30			
ι	18	27	34	19	28			
κ	17	24	34	16	25			
λ	17	22	34	18	23			
μ	16	19	34	16	20			
ν	14	17	34	14	18			

#2

	m	mtn	ltuth	m	mtn	Δm
β	20	25	30	23	29	
γ	25	29	30	29	33	
δ	24	28	30	28	33	
ε	22	27	30	26	32	
ζ	18	25	30	21	29	
η	14	22	30	16	26	
θ	12	19	30	14	22	
ι	11	17	30	13	20	
κ	11	15	30	13	17	
λ	10	14	30	12	16	
μ	10	13	30	12	15	
ν	9	11	30	11	13	

#3

	m	mtn	ltuth	m	mtn	m	mtn	Δm
β	27	30	34	28	31			
γ	32	33	34	33	34			
δ	32	35	35	32	35			
ε	30	35	35	30	35			
ζ	27	33	35	27	33			
η	22	30	35	22	30			
θ	19	27	35	19	27			
ι	18	25	35	18	25			
κ	–	–	–	–	–			
λ	–	–	–	–	–			
μ	–	–	–	–	–			
ν	–	–	–	–	–			

#4

	m	mtn	ltuth	m	mtn	Δm
β	19	24	33	20	25	
γ	25	30	33	27	32	
δ	24	30	32	26	33	
ε	20	28	32	22	31	
ζ	15	24	32	16	26	
η	12	20	32	13	22	
θ	9	17	32	10	19	
ι	8	14	32	9	15	
κ	6	11	32	7	12	
λ	–	–	–	–	–	
μ	–	–	–	–	–	
ν	–	–	–	–	–	

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1924phae.proj.1102P

5

	h	min	Hour	h	min	h	min	am	h	min	Hour	h	min	h	min	am
β	7	13	36	7	13											
γ	14	22	36	14	21											
δ	12	22	36	12	21											
ε	9	20	36	9	19											
ζ	6	15	36	6	15											
η	5	11	36	5	11											
θ	2	8	36	2	8											
ι	2	6	36	2	6											
κ	0	5	36	0	5											
λ	—	—	—	—	—											
μ	—	—	—	—	—											
ν	—	—	—	—	—											

#3 Repeated

#4 Repeated?

β	27	31	35	27	31				17	22	32	19	24			
γ	32	34	35	32	34				24	29	32	26	32			
δ	31	34	35	31	34				22	29	32	24	32			
ε	29	34	35	29	34				20	28	32	22	31			
ζ	25	32	35	25	32				15	24	32	16	26			
η	21	28	35	21	28				11	19	32	12	21			
θ	18	25	35	18	25				8	17	32	9	19			
ι	16	23	35	16	23				8	14	32	9	15			
κ	15	21	35	15	21				6	11	32	7	12			
λ	14	19	35	14	19				6	9	32	7	10			
μ	—	—	—	—	—				5	8	32	5	9			
ν	—	—	—	—	—				5	7	32	5	8			

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C 18762

	n	Mitte	Herbst	π	Mitte	(u)	(Mitte)	Ann	π	Mitte	Herbst	π	Mitte	(π)	(Mitte)	Ann
β																
γ																
δ																
ε																
ξ																
η																
θ																
ι																
κ																
λ																
μ																
ν																
β																
γ																
δ																
ε																
ξ																
η																
θ																
ι																
κ																
λ																
μ																
ν																

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n	m+n/m+n	n	m+n	(n)	(m+n)	Δm	n	m+n/m+n	n	m+n	(n)	(m+n)	Δm

β
γ
δ
ε
ζ
η
θ
ι
κ
λ
μ
ν

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1924phae.proj.1102P

C 1855 72

Reduced to 45

#1

	n	mtn	ltwtn	n	mtn	n	mtn	Δm
β	17	22	43					
γ	28	36	43					
δ	25	34	43					
ε	19	30	44					
ζ	12	23	44					
η	6	15	44					
θ	4	11	44					
ι	4	8	44					
κ	2	6	44					
λ	2	5	44					
μ	–	–	–					
ν								

#2

	n	mtn	ltwtn	n	mtn	n	mtn	Δm
β	5	10	44					
γ	11	21	44					
δ	9	21	45	9	21			
ε	5	16	45	5	16			
ζ	3	10	45	3	10			
η	0	6	45	0	6			
θ	–	–	–	–	–			
ι								
κ								
λ								
μ								
ν								

#3

	n	mtn	ltwtn	n	mtn	n	mtn	Δm
β	9	14	43					
γ	17	25	43					
δ	14	24	43					
ε	9	20	42					
ζ	6	13	42					
η	3	8	42					
θ	0	5	42					
ι	0	4	42					
κ	0	3	42					
λ	–	–	–					
μ								
ν								

#4

	n	mtn	ltwtn	n	mtn	n	mtn	Δm
β	6	9	42					
γ	7	14	42					
δ	6	15	43					
ε	3	12	43					
ζ	1	7	43					
η	0	4	43					
θ	–	–	–					
ι	–	–	–					
κ	–	–	–					
λ	–	–	–					
μ								
ν								

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β															
γ															
δ															
ε															
ξ															
η															
θ															
ι															
κ															
λ															
μ															
ν															

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X-14925 η Carinae Reduced to 50

	#13								#14							
	n	mtn	tmtn	$\bar{n}$	$\bar{n}$tn	(n)	(mtn)	Δm	n	mtn	tmtn	$\bar{w}$	$\bar{w}$tn	(n)	(wtn)	Δm
1	7	13	50	7	13	278	240		14	27	51	14	26			
2	22	26	50	22	26				49	39	51	48	38			
3	23	29	50	23	29				47	41	51	46	40			
3a	25	29	50	25	29				—	—	—	—	—	—	—	
3b	24	29	50	24	29				—	—	—	—	—	—	—	
4	18	28	50	18	28				43	42	51	42	41			
4a	22	25	49	22	25				—	—	—	—	—	—	—	
5	16	24	49	16	24				43	41	51	42	40			
5a	22	24	49	22	24				—	—	—	—	—	—	—	
5b	18	23	49	18	23				—	—	—	—	—	—	—	
5c	19	22	49	19	22				—	—	—	—	—	—	—	
6	10	18	49	10	18				44	40	51	43	39			
6a	12	15	49	12	15				—	—	—	—	—	—	—	
7	3	9	49	3	9				39	37	50	39	37			
8	—	—	—	—	—	—	—		42	36	50	42	36			
9	—	—	—	—	—	—	—		40	34	50	40	34			
10	—	—	—	—	—	—	—		25	29	50	25	29			
10a	—	—	—	—	—	—	—		22	24	50	22	24			
11	—	—	—	—	—	—	—		14	10	50	14	10			

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	# 15								# 12							
	W	m	h m	W	m	(m)	(m)	m	W	m	h m	W	m	(m)	(m)	m
1	1	2	45	7	3				9	13	48	9	14			
2	6	9	45	7	10				20	23	48	21	24			
3	7	10	45	8	11				21	25	48	22	26			
3a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
3b	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
4	5	10	45	6	11				15	26	48	16	27			
4a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
5	4	9	45	4	10				22	27	48	23	28			
5a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
5b	–	–	–	–	–	–	–		25	28	49	25	29			
5c	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–		22	26	49	22	27			
6a	–	–	–	–	–	–	–		21	24	49	21	24			
7	–	–	–	–	–	–	–		17	20	49	17	20			
8	–	–	–	–	–	–	–		11	16	49	11	16			
9	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
10	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
10a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–
11	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–

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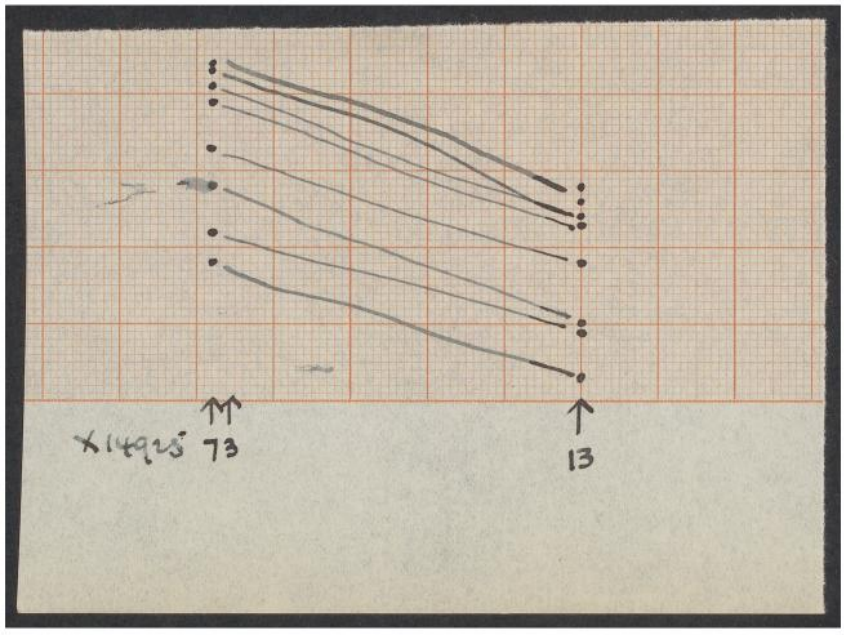
1924phae.proj.1102P

× 14925

	#10								#8							
	n	m-n	hr-m	$\bar{n}$	$\bar{m-n}$	(n)	(m-n)	sm	n	m-n	hr-m	$\bar{n}$	$\bar{m-n}$	(n)	(m-n)
1	–	–	–	–	–	–	–		–	–	–	–	–	–	
2	–	–	–	–	–	–	–		–	–	–	–	–	–	
3	–	–	–	–	–	–	–		–	–	–	–	–	–	
3a	–	–	–	–	–	–	–		–	–	–	–	–	–	
3b	–	–	–	–	–	–	–		–	–	–	–	–	–	
4	–	–	–	–	–	–	–		–	–	–	–	–	–	
4a	–	–	–	–	–	–	–		–	–	–	–	–	–	
5	15	19	47	16	20				–	–	–	–	–	–	
5a	14	19	47	15	20				–	–	–	–	–	–	
5b	–	–	–	–	–	–	–		–	–	–	–	–	–	
5c	–	–	–	–	–	–	–		–	–	–	–	–	–	
6	12	16	47	13	17				–	–	–	–	–	–	
6a	10	14	47	11	15				–	–	–	–	–	–	
7	7	10	46	8	11				–	–	–	–	–	–	
8	–	–	–	–	–	–	–		41	38	48	42	40		
9	–	–	–	–	–	–	–		42	36	48	43	38		
10	–	–	–	–	–	–	–		28	31	48	29	32		
10a	–	–	–	–	–	–	–		24	27	48	25	28		
11	–	–	–	–	–	–	–		–	–	–	–	–	–	

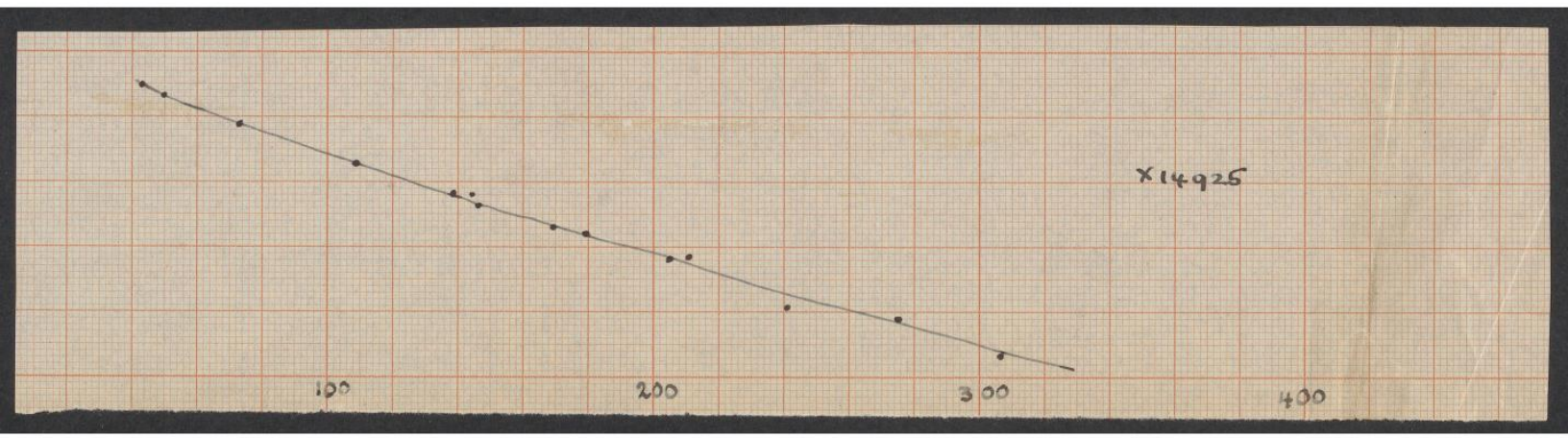
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19



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	#7								#11							
	W	mtn	hour	W	mtn	(W)	(mtn)	dm	W	mtn	hour	mtn	mtn	(W)	(mtn)	dm
1	–	–	–	–	–	–	–		15	18	48	16	19			
2	–	–	–	–	–	–	–		—	—	–	–	–			
3	37	40	46	40	43 ✓				–	–	–	–	–			
3a	–	–	–	–	–	–	–		27	30	48	28	31			
3b	–	–	–	–	–	–	–		–	–	–	–	–			
4	36	40	46	40	44 ✓				24	28	48	25	29			
4a	35	37	45	39	41				22	26	48	23	27			
5	32	37	45	36	41 ✓				19	25	48	20	26			
5a	34	37	45	38	41				21	25	48	22	26			
5b	33	35	45	37	39 ✓				19	21	48	20	22			
5c	32	34	45	36	38				17	20	48	18	21			
6	25	30	45	28	33 ✓				10	16	48	11	17			
6a	24	27	45	27	30				9	13	48	10	14			
7	16	20	45	18	22 ✓				4	7	48	5	8			
8	–	–	–	–	–	–	–		–	–	–	–	–			
9	–	–	–	–	–	–	–		–	–	–	–	–			
10	–	–	–	–	–	–	–		–	–	–	–	–			
10a	–	–	–	–	–	–	–		–	–	–	–	–			
11	–	–	–	–	–	–	–		–	–	–	–	–			

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× 14925
#5

Reduced to 45

	W	mon	Hours	W	mon	(n)	mon	dm	W	mon	Hours	W	mon	(W)	(mon)	dm
1	16	0	47	15	0	—	—									
2	5	3	47	5	3	300	314									
3	23	3	47	22	3	178	314									
4	11	4	47	10	4	254	306									
5	19	4	47	20	4		306									
6	43	4	47	41	4		306									
7	13	5	47	12	5		300									
8	12	5	46	12	5		300									
9	25	5	46	24	5		300									
10	10	6	46	10	6	254	292									
11	17	6	46	17	6		292									
12	27	7	46	26	7		284 ~~279~~									
13	16	9	46	16	9		270									
14	20	9	46	20	9		270									
15	15	9	46	15	9		270									
16	22	9	46	22	9		270									
17	29	10	46	28	10		263									
18	18	10	46	18	10		263									
19	15	10	46	15	10		263									
20	35	11	46	34	11		254									
21	22	11	46	21	11		254									
22	18	10	46	18	10		263									
23	30	10	46	29	10		263									
24	30	10	46	29	10		263									
25	16	10	46	16	10		263									
26	19	10	46	19	10		263									
27	31	10	46	30	10		263									
28	28	10	46	27	10		263									
29	25	10	46	24	10		263									
30	15	9	46	15	9		270									

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	N	min	hours	N	min	(N)	(min)	Δm	N	min	hours	N	min	(N)	(min)	Δm
31	30	9	46	29	9		270									
32	25	9	46	24	9		270									
33	30	9	46	29	9		270									
34	31	9	46	30	9		270									
35	12	9	46	12	9		270									
36	12	9	46	12	9		270									
37	41	9	46	40	9		270									
38	15	9	46	15	9		270									
39	21	9	46	21	9		270									
40	21	9	46	21	9		270									
41	43	9	46	41	9		270									
42	35	9	46	34	9		270									
43	37	9	46	36	9		270									
44	19	9	46	19	9		270									
45	26	9	46	25	9		270									
46	16	9	46	16	9		270									
47	23	8	46	22	8		279									
48	19	8	46	19	8		279									
49	41	8	46	40	8		279									
50	30	7	46	29	7		284									
51	10	7	46	10	7	254	284									
52	11	7	46	11	7		284									
53	38	7	46	37	7		284									
54	29	6	46	28	6		292									
55	8	6	46	8	6		292									
56	8	6	46	8	6		292									
57	10	6	46	10	6	254	292									
58	12	6	46	12	6		292									
59	23	6	46	22	6		292									
60	15	5	46	15	5		300									

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	N	cents	feet	N	cents	(h)	(min)	sm
? 61		5	46					
62	8	5	46	8	5			
63	9	5	46	9	5			
64	9	5	46	9	5			
65	10	4	46	10	4			
66	13	4	46	13	4			
67	23	4	46	22	4			
68	7	3	46	7	3			
69	8	3	46	8	3			
70	16	3	46	16	3			
71	7	2	46	7	2			
72	6	2	46	6	2			
73	11	1	46	11	1			
74	4	0	46	4	0			
75								

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X-13408

Reduced to 52

	#7								#8							
	n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm	n	m+n	l+m+n	$\bar{n}$	$\overline{m+n}$	(n)	(m+n)	Δm
1	—	—	—													
2	—	—	—													
3	31	34	50	32	35											
3a	—	—	—													
3b	31	38	50	32	34											
4	29	32	50	30	33											
4a	28	30	50	29	31											
5	24	30	50	25	31											
5a	28	30	50	29	31											
5b	26	29	50	27	30											
5c	25	28	50	26	29											
6	21	26	51	21	26											
6a	20	24	51													
7	13	18	51													
8	—	—	—						33	32		32	31			
9									40	31	53	39	30			
10									20	25	53	20	25			
10a									17	21	53	17	21			
11																

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	#11								#13							
	N	min	Hours	$\bar{n}$	$\bar{m}$	(n)	(m)	Δm	n	min	Hours	$\bar{n}$	$\bar{m}$	(n)	(m)	Δm
1	11	14	52						3	8	51					
2	–	–	–						14	18	51					
3	–	–	–						14	20	51	14	20			
3a	22	25	52						16	19	51					
3b	–	–	–						15	19	51	15	19			
4	19	24	52						11	19	51	11	19			
4a	–	–	–						15	18	51	15	18			
5	19	21	52						11	18	51	11	18			
5a	–	–	–						15	18	50	15	18			
5b	15	18	52						14	18	50	14	18			
5c	14	17	51						15	18	15	15	18			
6	7	13	51						11	18	50	11	18			
6a	6	9	51						+	–	–					
7	1	6	51													
8	–	–	–													
9																
10	–															
10a	"															
11																

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	#~~5~~ 14								#17							
	N	m tn	l tn tn	$\overline{n}$	$\overline{m tn}$	(n)	(m tn)	Δm	n	m tn	l tn tn	$\overline{n}$	$\overline{m tn}$	(n)	(m tn)	Δm
1	30	24	51						24	28	51					
2	47	34	51						—	—	—					
3	43	34	51						—	—	—					
3a	—	—	—						—	—	—					
3b	—	—	—						—	—	—					
4	37	35	52						37	41	50					
4a	—	—	—						34	37	50					
5	38	36	52						29	36	50					
5a	—	—	—						—	—	—					
5b	—	—	—						—	—	—					
5c	—	—	—						—	—	—					
6	38	34	52						15	26	50					
6a	—	—	—						15	19	50					
7	—	—	—						6	10	50					
8	26	28	52	36	28				—	—	—					
9	33	27	52	33	27											
10	16	20	52	16	20											
10a	—	—	—													
11																

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	#19									X13408 #5									
	h	min	Hours	h	min	(h)	(min)	dm		h	min	Hours	h	min	h	min	dm	
1	4	11	51						1	9	0	52	9	0				
2	—	—	—						2	3	0	52	3	0				
3	21	25	50						3	15	1	52	15	1				
3a	—	—	—						4	7	2	52	7	2				
3b	22	26	50						5	13	2	52	13	2				
4	11	25	50						6	40	3	52	40	30				
4a	—	—	—						7	8	3	52	8	3				
5	9	23	50						8	18	4	52	18	4				
5a	20	23	50						9	8	4	52	8	4				
5b	15	20	49						10	8	4	52	8	4				
5c	—	—	—						11	10	4	52	10	4				
6	5	15	49						11a	10	5	52	10	5				
6a	—	—	—						12	20	6	52	20	6				
7	3	7	49						13									
8									14	15	8	52	15	8				
9									15	—	—	—						
10									16	17	9	52	17	9				
10a									17	25	9	52	25	9				
11									18	15	9	53	15	9				
									19	—	—	—	..	..				
									20	22	9	53	22	9				
									21	18	9	53	18	9				
									22	14	9	53	14	9				
									23	25	9	53	25	9				
									24	26	9	53	26	9				
									25	14	9	53	14	9				
									26	15	9	53	15	9				
									27	18	9	53	18	9				
									28	14	9	53	14	9				
									29	11	9	53	11	9				
									30	8	13	53	8	13				

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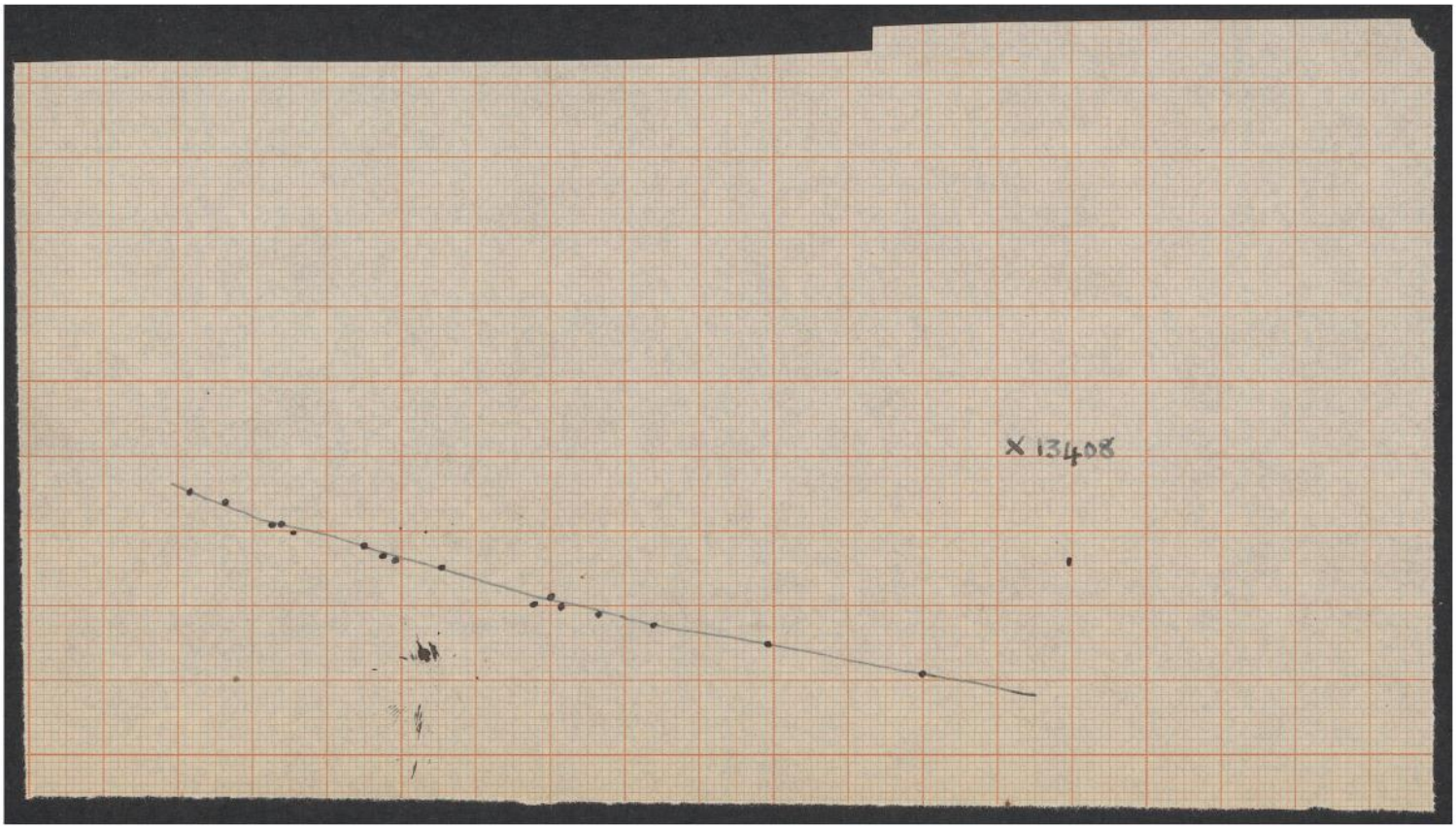
X B408 Cont.

5 (Cont)

	n			n			n			n			n		
31	24	8	53							60 a	15	5	53		
32	11	8	53							61	—	—	—		
33	20	8	53							62	9	5	53		
34	24	8	53							63	8	5	53		
35	28	8	53							64	9	5	53		
36	10	8	53							65	9	5	53		
37	36	8	53							66	10	4	53		
38	11	8	53							67	18	4	53		
39	17	8	53							68	16	4	53		
40	15	8	53							69	7	3	53		
41	41	8	53							70	14	3	53		
42	31	8	53							71	7	3	53		
43	33	8	53							72	7	2	53		
44	14	8	53							73	8	1	53		
45	20	8	53							74	5	1	53		
46	+	—	—							75					
47	19	8	53												
48	16	8	53												
49	39	8	53												
50	25	8	53												
51	9	7	53												
52	11	7	53												
53	35	7	53												
54	25	7	53												
55	10	7	53												
56	8	6	53												
57	10	6	53												
58	11	6	53												
59	20	6	53												
60	15	5	53												

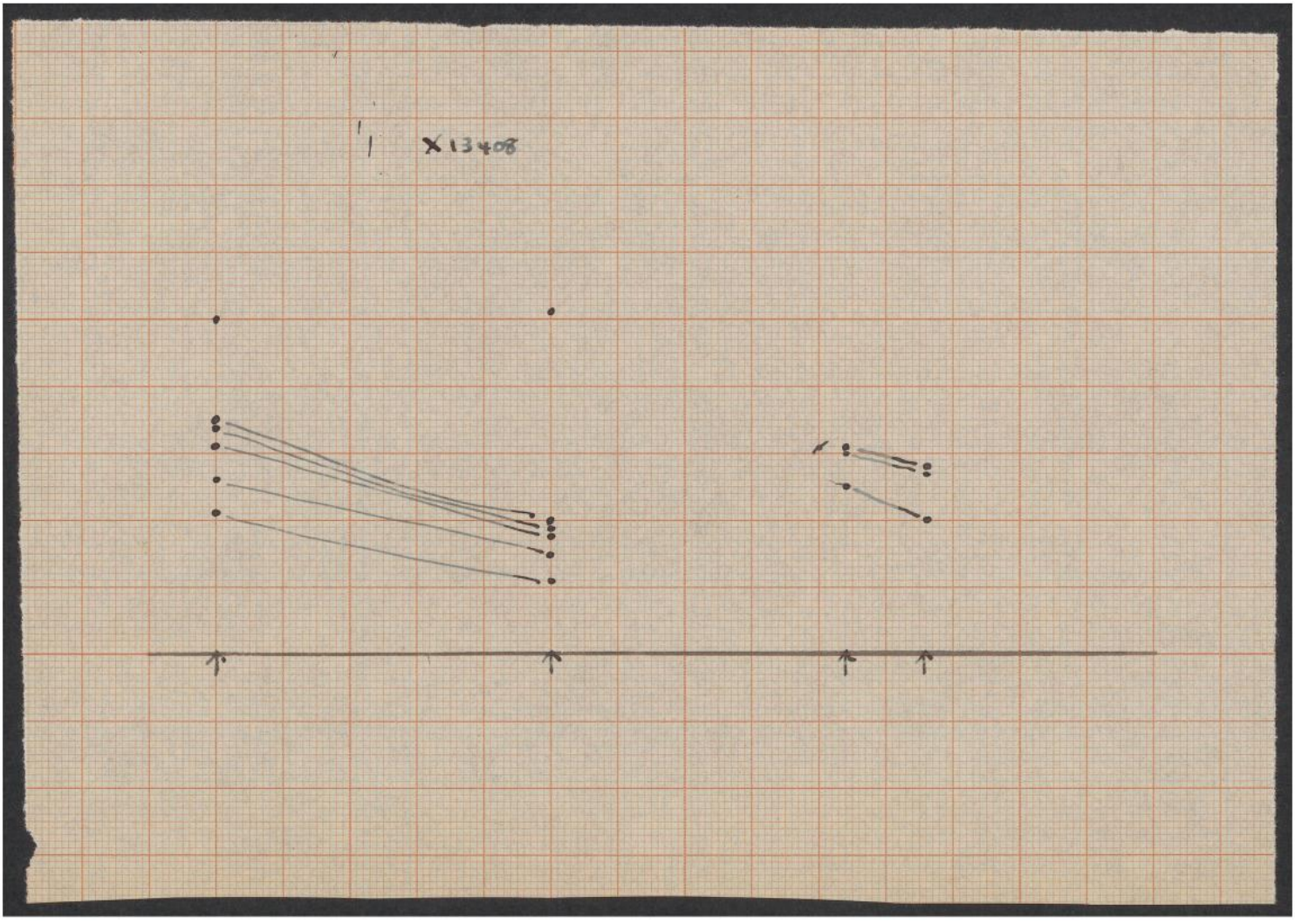
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~~#~~ ~~#~~ 18

n	h	m	s	h	m	s	h	m	s	no.	h	m	s	h	m	s	h	m	s
1	41	44	51							31	19	34	51						
2	42	44	51							32	24	33	51						
3	41	44	51							33	22	33	51						
4	39	44	51							34	20	33	51						
5	42	44	51							35	18	32	51						
6	40	44	51							36	21	32	51						
7	40	44	51							37	23	31	51						
8	36	43	51							38	19	31	51						
9	37	43	51							39	15	31	51						
10	36	43	51							40	17	30	51						
11	35	42	51							41	22	29	51						
12	30	42	51							42	22	29	51						
13	34	42	51							43	21	28	51						
14	25	42	51							44	19	28	51						
15	34	41	51							45	20	28	51						
16	37	41	51							46	22	27	51						
17	34	41	51							47	15	26	51						
18	31	40	51							48	15	25	51						
19	25	40	51							49	11	24	51						
20	18	39	51							50	15	23	51						
21	22	39	51							51	9	22	51						
22	26	38	51							52	17	21	51						
23	31	38	51							53	15	21	51						
24	21	38	51							54	13	20	51						
25	26	38	51							55	16	20	51						
26	26	38	51							56	16	18	51						
27	27	38	51							57	16	17	51						
28	29	36	51							58	11	16	51						
29	13	35	51							59	10	13	51						
30										60									

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	m	m+k	t	$\bar{m}$	$m-\bar{m}$	(x)	$(x-\bar{x})$	ΔM
61	7	11	51					
62	3	9	51					
63	1	8	51					
64	0	8	51					
65	0	5	51					
? 66	7	5	51					
67	0	4	51					
68								
69								

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170

X 13413

Reduced to 70

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#2

	n	mean	Hunter	$\bar{m}$	$\bar{m}$ tan	(n)	(n tan)	Δ	n	m tan	Hunter	$\bar{m}$	$\bar{m}$ tan	(n)	(n tan)	m
1	11	15	69	11	15				20	28	75	19	26			
2	27	29	69	27	29				–	–	–	–	–			
3	28	32	69	28	32				47	51	75	44	48			
3a	–	–	–	–	–	–	–		–	–	–	–	–			
3b	–	–	–	–	–	–	–		47	50	74	44	47			
4	24	30	69	24	30				37	49	74	35	46			
4a	–	–	–	–	–	–	–		–	–	–	–	–			
5	18	24	68	18	24				28	43	73	27	41			
5a	20	23	68	20	23				38	41	73	36	39			
5b	–	–	–	–	–	–	–		33	37	72	32	36			
5c	–	–	–	–	–	–	–		31	35	72	30	34			
6	11	14	68	11	14				12	28	72	12	27			
6a	–	–	–	–	–	–	–		–	–	–	–	–			
7	–	–	–	–	–	–	–		3	9	72	3	9			
8	–	–	–	–	–	–	–		–	–	–	–	–			
9	–	–	–	–	–	–	–		–	–	–	–	–			
10	–	–	–	–	–	–	–		–	–	–	–	–			
10a	–	–	–	–	–	–	–		–	–	–	–	–			
11	–	–	–	–	–	–	–		–	–	–	–	–			

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	#3								#4							
	n															
1	9	21	74	9	20				3	25	77	3	23			
2	~~4~~	–	–	–	–	–	–		–	–	–	–	–	–	–	
3	40	46	73	38	44				47	51	75	44	48			
3a	–	–	–	–	–	–	–		49	51	75	46	48			
3b	42	46	73	40	44	–	–		47	51	75	44	48			
4	25	46	73	24	44				10	50	75	9	47			
4a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
5 ~~46~~	21	42	73	20	40				6	46	74	6	44			
5a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
5b	29	36	72	28	35				–	–	–	–	–	–	–	
5c	32	34	72	31	33				–	–	–	–	–	–	–	
6	9	29	72	9	28				3	32	74	3	30			
6a	16	21	72	16	20				18	25	73	17	24			
7	1	12	72	1	12				0	14	73	0	13			
8	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
9	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
10	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
10a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
11	–	–	–	–	–	–	–		–	–	–	–	–	–	–	

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X 13413 (cont.)

	#7								#8							
	R	meter	theta	u	meter	u	meter	obs	R	meter	theta	u	meter	u	meter	obs
1	20	25	73	19	24				26	19	68	27	20			
2	42	45	72	41	44				56	37	68	58	38			
3	42	47	72	41	46				39	47	68	40	48			
3a	44	47	72	43	46				-	-	-	-	-	-	-	
3b	44	47	72	43	46				-	-	-	-	-	-	-	
4	39	46	72	38	45				43	41	68	44	42			
4a	38	41	71	37	40				-	-	-	-	-	-	-	
5	35	40	71	35	39				43	41	68	44	42			
5a	37	40	71	36	39				-	-	-	-	-	-	-	
5b	36	39	71	35	38				-	-	-	-	-	-	-	
5c	33	38	70	33	38				.	-	-	-	-	-	-	
6	25	32	70	25	32				45	40	68	46	41			
6a	23	26	70	23	26				-	-	-	-	-	-	-	
7	13	18	70	13	18				4-	-	-	-	-	-	-	
8	-	-	-	-	-	-	-		43	38	68	44	39			
9	-	-	-	-	-	-	-		46	36	68	47	37	?		
10	-	-	-	-	-	-	-		21	27	68	22	28			
10a	-	-	-	-	-	-	-		20	22	68	21	23			
11	-	-	-	-	-	-	-		10	14	68	10	14			

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	#14								#21							
	u			u		u		Obs	u			u		u		Obs
1	28	17	70	28	17				5	15	69	5	15			
2	69	34	70	59	34				–	–	–	–	–	–	–	
3	49	36	70	49	36				–	–	–	–	–	–	–	
3a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
3c	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
4	41	36	70	41	36				11	34	71	11	34			
4a	–	–	–	–	–				–	–	–	–	–	–	–	
5	42	36	70	42	36				6	30	73	6	29			
5a	–	–	–	–	–	–	–		27	29	73	26	28			
5c	–	–	–	–	–	–	–		23	26	73	22	25			
5c	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
6	42	36	70	42	36				1	19	74	1	18			
6a	–	–	–	–	–	–	–		–	–	–	–	–	–	–	
7	33	31	69	33	31				-1	6	74	-1	6	–		
8	40	30	69	41	30				–	–	–	–	–			
9	36	28	69	37	28				–	–	–	–	–			
10	19	22	69	19	22				–	–	–	–	–			
10a	–	–	–	–	–	–	–		–	–	–	–	–			
11	–	–	–	–	–	–	–		–	–	–	–	–			

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1924phae.proj.1102P

X-13413

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5 n Carinae

	n	meter	Hewitt	Ti	meter	(Ti)	(meter)	Abs	Ti	meter	Hewitt	Ti	meter	(Ti)	(meter)	Abs
1	20	23	71						8	0	71					
2	18	25	71						3	2	71					
3	22	29	71						15	3	71					
4	21	31	71						8	3	71					
5	24	33	71						12	3	71					
6	30	39	71						6	4	71					
7	36	43	71						8	4	71					
8	37	44	71						9	4	71					
9	41	47	71						19	4	71					
10	42	49	71						9	5	71					
11	46	50	71						11	5	71					
12	49	51	71						20	6	71					
13	46	52	71						12	8	71					
14	48	53	71						15	8	70					
15	46	54	71						18	8	70					
16	54	56	71						18	9	70					
17	55	58	71						25	9	70					
18	56	58	71						14	9	70					
18a	–	–	–						7	9	70					
19	55	59	71						–	–	–					
20	55	60	71						35	10	70					
21	57	62	71						–	–	–					
22	58	63	71						14	10	70					
23	60	63	71						27	10	70					
24	60	63	71						26	10	70					
25	57	63	71						13	10	70					
26	60	63	71						14	10	70					
27	57	63	71						29	10	70					
28	59	64	71						24	10	70					
29	69	64	71						20	10	70					
	18	63	71						13	10	70					

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#22 (cont)

31	58	63	71						
32	59	63	71						
33	58	62	71						
34	55	62	71						
35	53	61	71						
36	51	61	71						
37	57	61	71						
37a	—	—	—						
38	51	60	71						
39	54	60	71						
40	53	59	71						
41	50	59	71						
42	44	58	71						
43	46	58	71						
44	47	57	71						
45	45	57	71						
46	48	56	71						
47	47	56	71						
48	43	55	71						
49	33	55	71						
50	28	53	71						
51	40	52	71						
52	46	52	71						
53	45	51	71						
54	42	51	71						
55	33	50	71						
56	30	49	71						
57	35	48	71						
58	19	47	71						
59	22	47	71						
60	18	45	71						

#5 (cont.)

25	10	70							
20	9	70							
26	9	70							
25	9	70							
17	9	70							
9	9	70							
44	8	70							
5	8	70							
10	8	70							
16	8	69							
17	8	69							
47	8	69							
33	8	69							
36	8	69							
14	7	69							
18	7	69							
12	7	69							
18	7	69							
15	6	69							
43	6	69							
23	6	69							
9	6	69							
10	6	69							
37	5	69							
24	5	69							
9	5	69							
10	5	68							
8	5	68							
8	4	68							
17	4	68							
12	4	68							

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22 (cont)

n																
60a									6	3	68					
61	30	45	71						8	3	68					
62	17	44	71						5	3	68					
63	25	42	71						7	3	68					
63a	—	—	—	—	—	—	—	—	8	3	68					
64	20	41	71						5	3	68					
65	21	39	71						6	3	68					
66	5	39	71						8	2	68					
67	20	37	71						18	2	68					
68	15	36	72						5	2	68					
69	17	35	72						6	2	68					
70	21	34	72						9	2	68					
71	18	33	72													
72	16	33	72													
73	13	32	72													
74	17	32	72													
75	17	31	72													
76	14	30	72													
77	12	29	72													
78	11	28	72													
79	14	26	72													
80	13	25	72													
81	11	24	72													
82	15	23	72													
83	19	23	72													
84	14	22	72													
85	7	20	72													
86	9	20	72													
87	6	19	72													
88	9	18	72													
89	8	17	72													
90	5	16	72													

5 (cont)

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22 (cont.) #21

91	11	15	72						1	12	37	74						
92	4	14	72						3	59	60	74						
93	5	12	72						4	29	59	74						
94	7	12	72						5	20	56	74						
95	6	11	72						5b	57	54	74						
96	3	10	72						5c	57	53	74						
97	–	–	–						6	10	46	74						
98	–	–	–						6a	34	39	74						
99	–	–	–						7	2	27	74						
100	–	–	–						8	0	11	74						

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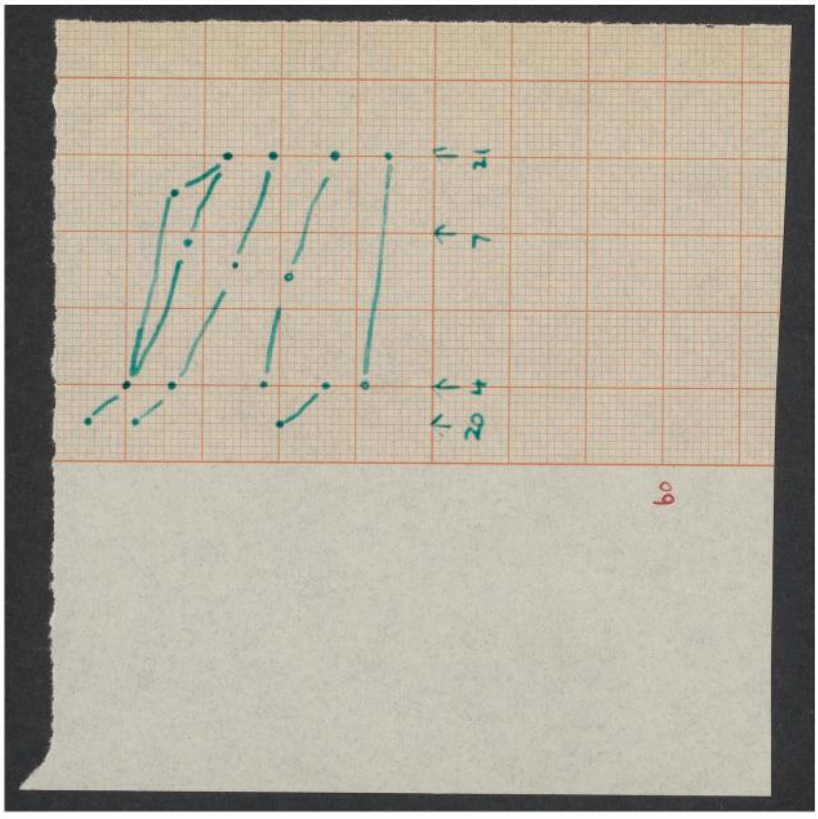
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	#7 Bo, 6.6								#3 Bs, 5.8							
	n	mtn	ltmtn	$\bar{n}$	mtn	(n)	(mtn)	Δm	n	mtn	ltmtn	$\bar{n}$	mtn	(n)	(mtn)	Δm
	7	—	—	—	—				6	14	81	6	14			
	—	—	—	—	—				—	—	—	—	—			
	29	35	82	28	34 ✓				30	35	81	30	35 ✓			
	31	34	82	30	33				—	—	—	—	—			
	—	—	—	—	—				31	35	81	31	35			
	26	33	82	25	32 ✓				15	35	81	15	35			
	25	33	82	24	32				—	—	—	—	—			
	19	27	82	19	26 ✓				11	31	81	11	31			
	24	26	82	23	25 ✓				—	—	—	—	—			
	19	24	82	19	23				19	26	81	19	26			
	—	—	—	—	—				20	24	81	20	24			
	13	19	82	13	19 ✓				6	20	81	6	20			
	10	15	82	10	15				10	13	81	10	13			
									0	8	81	0	8			
													#5			
OCP, 6.3 #8	1	19	12	79	19	12	206		1	—	—	—	—	—			η Car
	2	55	28	79	56	28	104		2		—	—	—	—		
	3	40	31	79	41	31	91		3	11	1	80	11	1		
	4	36	33	79	36	33	83		4	4	2	80	4	2		
	5	37	33	79	37	33	83		5	7	2	80	7	2		
	6	38	34	79	38	34	79		6	41	3	80	41	3		
	7	—	—	—	—	—			7	6	3	80	6	3		
	8	37	30	78	38	31	91		8	9	4	80	9	4		
	9	40	28	78	41	29			9	14	4	80	14	4		
	10	15	20	78	15	21	140		10	6	4	80	6	4		
	10a	12	15	78	2	15			11	11	4	80	11	4		
	11	2	6	78	2	6			16	10	5	80	10	5		
									17	16	5	80	16	5		
									12a	6	4	79	6	4		
									13	10	6	79	10	6		

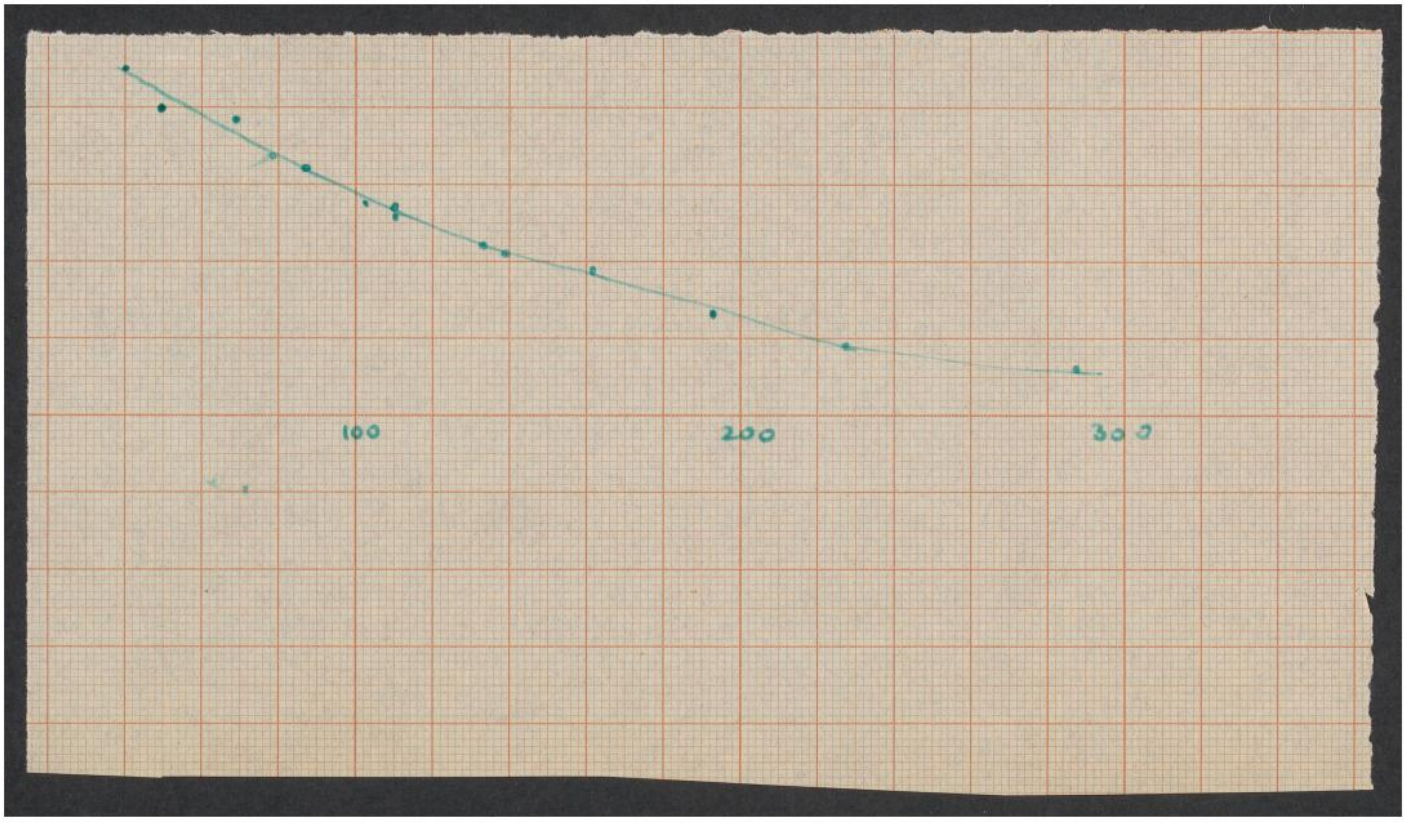
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#7 Bo, 6.6

n	mtn	ltmtn	n̄	mtn	(n)	(mtn)	Δm
7	—	—	—	—			
—	—	—	—	—			
29	35	82	28	34 ✓			
31	34	82	30	33			
—	—	—	—	—			
26	33	82	25	32 ✓			
25	33	82	24	32			
19	27	82	19	26 ✓			
24	26	82	23	25 ✓			
19	24	82	19	23			
—	—	—	—	—			
13	19	82	13	19 ✓			
10	15	82	10	15			

#3 B5, 5.8

n	mtn	ltmtn	n̄	mtn	(n)	(mtn)	Δm
6	14	81	6	14			
—	—	—	—	—			
30	35	81	30	35 ✓			
—	—	—	—	—			
31	35	81	31	35			
15	35	81	15	35			
—	—	—	—	—			
11	31	81	11	31			
—	—	—	—	—			
19	26	81	19	26			
20	24	81	20	24			
6	20	81	6	20			
10	13	81	10	13			
0	8	81	0	8			
				#5			

UCP, 6.3 #8

	n	mtn	ltmtn	n̄	mtn	(n)	(mtn)	Δm
1	19	12	79	19	12	206		
2	55	28	79	56	28	104		
3	40	31	79	41	31	91		
4	36	33	79	36	33	83		
5	37	33	79	37	33	83		
6	38	34	79	38	34	79		
7	—	—	—	—	—			
8	37	30	78	38	31	91		
9	40	28	78	41	29			
10	15	20	78	15	21	140		
10a	12	15	78	2	15			
11	2	6	78	2	6			

n	mtn	ltmtn	n̄	mtn	(n)	(mtn)	Δm
1 -	—	—	—	—			
2 -	—	—	—	—			
3 11	1	80	11	1			
4 4	2	80	4	2			
5 7	2	80	7	2			
6 41	3	80	41	3			
7 6	3	80	6	3			
8 9	4	80	9	4			
9 14	4	80	14	4			
10 6	4	80	6	4			
11 11	4	80	11	4			
16 10	5	80	10	5			
17 16	5	80	16	5			
12a 6	4	79	6	4			
13 10	6	79	10	6			

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#5 Cont

	n	m-m	t-m	m̄	m-m	(n)	(m-m)	Δ
14	14	6	79	14	6			
15	11	6	79	11	6			
16	15	7	79	15	7			
17	22	7	79	22	7			
18	12	7	79	12	7			
19	11	8	79	11	8			
20	30	8	79	30	8			
21	16	8	79	16	8			
22	12	8	79	12	8			
23	24	8	79	24	8			
24	23	8	79	23	8			
25	13	8	79	13	8			
26	13	8	79	13	8			
26a	16	8	79	16	8			
27	25	8	79	25	8			
28	21	8	79	21	8			
29	17	8	79	17	8			
30	11	8	79	11	8			
31	31	8	79	31	8			
32	18	8	79	18	8			
33	20	8	79	20	8			
34	22	8	79	22	8			
35	9	7	79	9	7			
36	8	8	79	8	8			
37	38	8	79	38	8			
38	10	8	79	10	8			
39	13	8	78	13	8			
40	12	8	78	12	8			
41	42	7	78	43	7			

#5 Cont

	n	m-m	t-m	m̄	m-m	(n)	(m-m)	Δm.
43)	30	7	78	31	7			
44)	11	7	78	11	7			
45)	16	7	78	16	7			
	11	7	78	11	7			
	15	7	78	15	7			
	12	7	78	12	7			
	38	7	78	39	7			
50)	20	6	78	21	6			
	8	6	78	8	6			
	8	5	78	8	5			
	32	5	78	33	5			
	19	5	78	19	5			
55)	8	5	78	8	5			
	7	5	78	7	5			
	7	5	78	7	5			
	7	4	78	7	4			
	14	4	78	14	4			
60)	11	3	78	11	3			
	-	-	-	-	-			
	-	-	-	-	-			
	-	-		-	-			
	-	-	-	-	-			
69)	6	2	78	6	2			
	8	2	78	8	2			
	12	2	78	12	2			
	5	2	78	5	2			
	6	2	77	6	2			
70)	8	2	77	8	2			

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#9

	n	mtn	temp	ñ	mtn	(n)	(mtn)	Δm		n	mtn	temp	ñ	mtn	(n)	(mtn)	Δm
1	18	25	84	17	24				31	52	60	84	50	57			
2	22	29	84	21	28				32	57	60	84	54	57			
3	24	31	84	23	30				33	58	61	84	55	58			
4	27	35	84	26	33				34	51	60	84	49	57			
5	31	37	84	30	35				35	51	60	84	49	57			
6	34	39	84	32	37				36	50	59	84	48	56			
7	35	40	84	33	38				37	53	59	84	51	56			
8	33	43	84	31	42				38	51	58	84	49	55			
9	27	45	84	35	43				39	47	58	84	45	55			
10	34	46	84	32	44				40	48	57	84	46	54			
11	40	47	84	38	45				41	44	57	84	42	54			
12	41	48	84	39	46				42	40	57	84	38	54			
13	43	49	84	41	47				43	50	56	84	48	53			
14	44	50	84	42	48				44	53	56	84	51	53			
15	46	50	84	44	48				45	41	55	84	39	52			
16	47	51	84	45	49				46	44	54	84	42	51			
17	46	51	84	44	49				47	40	53	84	38	51			
18	49	52	84	47	50				48	32	52	84	30	50			
19	44	53	84	42	51				49	36	50	84	34	48			
20	47	54	84	45	51				50	33	50	84	31	48			
21	52	56	84	50	53				51	37	49	84	35	47			
22	49	57	84	47	54				52	33	49	84	31	47			
23	52	57	84	50	54				53	23	47	84	22	45			
24	51	58	84	49	55				54	17	46	84	16	44			
25	53	58	84	51	55				55	31	45	84	30	43			
26	53	58	84	51	55				56	37	44	84	35	42			
27	52	58	84	50	55				57	35	44	84	33	42			
28	49	59	84	47	56				58	31	43	84	30	41			
29	54	59	84	51	56				59	22	42	84	21	40			
30	50	60	84	48	57				60	35	41	84	33	39			

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#9 cont.

	n	meth	Hmeth	$\bar{n}$	$\overline{meth}$	(k)	(meth)	dm
61	21	41	84	20	39			
62	26	40	84	25	38			
63	11	39	84	10	37			
64	14	39	84	13	37			
65	11	38	84	10	36			
66	20	37	84	19	35			
67	13	36	84	12	34			
68	11	36	84	10	34			
69	17	35	84	16	33			
70	13	35	84	12	33			
71	13	34	84	12	32			
72	15	33	84	14	31			
73	13	32	84	12	30			
74	2	32	84	2	30			
75	11	30	84	10	29			
76	10	29	84	9	28			
77	11	29	84	10	28			
78	14	28	84	13	27			
79	13	28	84	12	27			
80	13	27	84	12	26			
81	8	26	84	8	25			
82	12	26	84	11	25			
83	14	25	84	13	24			
84	10	25	84	10	24			
85	8	24	84	8	23			
86	10	23	84	10	22			
87	11	22	84	10	21			
88	11	21	84	10	20			
89	11	21	84	10	20			
90	10	20	84	10	19			

	n	meth	Hmeth	$\bar{n}$	$\overline{meth}$	(k)	(meth)	dm
91	9	19	84	9	18			
92	11	18	84	10	17			
93	12	18	84	11	17			
94	8	17	84	8	16			
95	10	17	84	10	16			
96	7	17	84	7	16			
97	10	16	84	10	15			
98	7	15	84	7	14			
99	9	15	84	9	14			
100	6	15	84	6	14			
101								

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X 13035

Reduced to 85

	# 8								# 14							
	n			ū		(u)		Δu	u			ū		(u)		Δu
1	18	11	85	18	11				17	9	80	18	10			
2	49	25	84	50	25				44	18	80	47	19			
3	36	29	84	36	29				32	20	80	34	21			
3a	—	—	—	—	—				—	—	—	—	—			
3b	—	—	—	—	—				—	—	—	—	—			
4	—	—	—	—	—				23	21	80	24	22			
4a	—	—	—	—	—				—	—	—	—	—			
5	—	—	—	—	—				23	20	80	24	21			
5a	—	—	—	—	—				—	—	—	—	—			
5b	—	—	—	—	—				—	—	—	—	—			
5c	—	—	—	—	—				—	—	—	—	—			
6	33	29	84	33	29				22	17	80	23	18			
6a	—	—	—	—	—				23	16	80	24	17			
7	—	—	—	—	—				24	15	80	26	16			
8	30	26	84	30	26				21	15	80	22	16			
9	34	24	84	34	24				20	14	80	21	15			
10	—	—	—	—	—				7	10	80	7	11			
				#7								#	5			
1	16	19	85	16	19				1 4	0	84	4	0			
2	28	32	85	28	32				2 —	—	—	—	—			
3	25	30	85	25	30				3 10	2	84	10	2			
3a	—	—	—	—	—				4 4	2	84	4	2			
3b	—	—	—	—	—				5 8	2	84	8	2			
4	23	28	85	23	28				6 37	3	84	37	2			
4a	—	—	—	—	—				7 7	3	84	7	3			
5	18	24	84	18	24				8 6	3	84	6	3			
5a	—	—	—	—	—				9 10	3	84	10	3			
5b	18	22	84	18	22				10 5	3	84	5	3			
5c	—	—	—	—	—				11 6	3	84	6	3			
6	14	19	84	14	19				12 10	4	84	10	4			
6a	11	15	84	11	15											

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#5 cont.

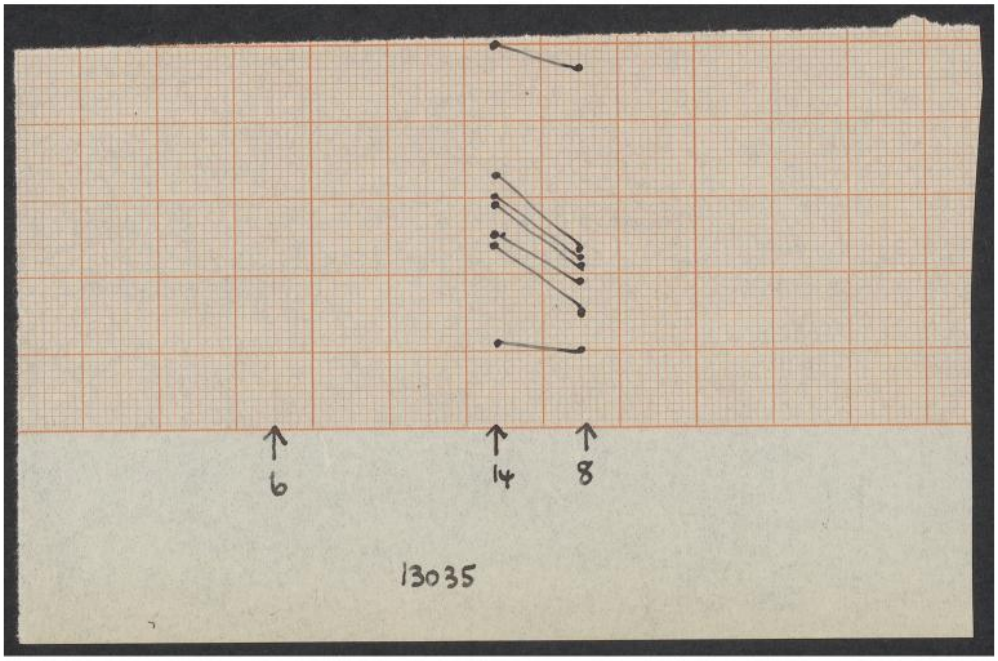
Reduced to 8s

	n	m+u	l+u+a	$\bar{u}$	$\bar{u}$+u	(u)	(u+v)	obs
13	6	4	84	6	4			
14	8	4	84	8	4			
15	7	4	84	7	4			
16	9	4	84	9	4			
17	14	4	84	14	4			
18	7	4	83	7	4			
19	5	5	83	5	5			
20	22	5	83	23	5			
21	~~10~~	~~5~~	~~83~~	—	-			
22	10	5	83	10	5			
23	18	5	83	18	5			
24	17	5	83	17	5			
25	7	5	83	7	5			
26	9	5	83	9	5			
27	17	5	83	17	5			
28	13	5	83	13	5			
29	11	5	83	11	5			
30	7	5	83	7	5			
31	13	5	83	13	5			
32	9	5	83	9	5			
33	12	5	83	12	5			
34	12	5	83	12	5			
35	5	5	83	5	5			
36	3	5	83	3	5			
37	24	5	83	25	5			
38	7	5	83	7	5			
39	8	5	83	8	5			
40	7	4	83	7	4			
41	27	4	83	28	4			
42	18	4	83	18	4			
43	19	4	83	19	4			

	n	m+u	l+u+a	$\bar{u}$	$\bar{u}$+u	(u)	(u+v)	obs
44	6	4	83	6	4			
45	9	4	83	9	4			
46	7	4	83	7	4			
47	10	4	83	10	4			
48	9	4	83	9	4			
49	24	4	83	25	4			
50	10	4	83	10	4			
51	5	4	83	5	4			
52	—	-	—	—	-			
53	19	3	83	19	3			
54	17	4	83	13	4			
55	5	3	83	5	3			
56	-	—	-	—	-			
57	—	-	-	—	-			
58	—	-	-	—	-			
59	9	2	83	9	2			
60	6	2	83	6	2			
61	—	—	-	—	—			
62	—	—	-	—	—			
63	—	—	-	—	—			
64	—	-	-	—	-			
65	—	—	-	—	—			
66	5	1	83	5	1			
67	—	—	—	—	—			
67a	9	1	83	9	-			
68	5	1	83	5	—			
69	9	1	83	9	-			
70	24	1	83	25	1			
70a	10	1	83	10	1			

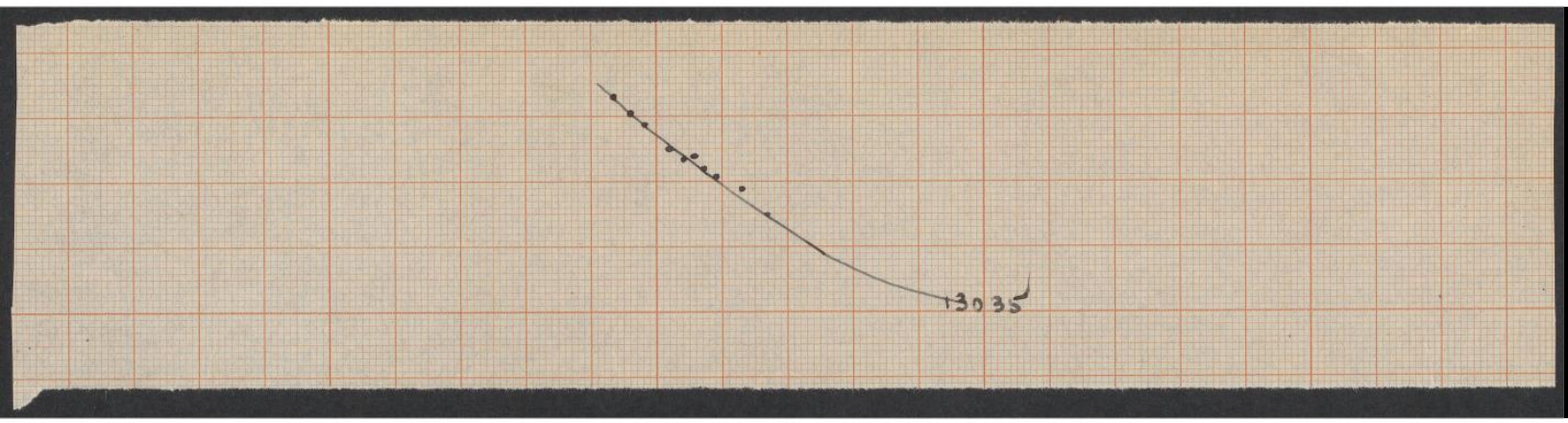
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#9 Reduced to 85

	m	m+h	H+m	u	u+h	u	u+h	Δαδ	δ	u	u+h	H+m	u	u+h	u	u+h	Δαδ
-3	7	12	84	7	12				27	42	49	85	42	49			
-2	10	15	84	10	15				28	38	50	85	38	50			
-1	11	17	84	11	17				29	43	50	85	43	50			
0	11	18	84	11	18				30	38	50	85	38	50			
1	15	23	85	15	23				31	42	50	85	42	50			
2	20	25	85	20	25				32	46	50	85	46	50			
3	20	27	85	20	27				33	47	50	85	47	50			
4	23	31	85	23	31				34	42	50	85	42	50			
5	—	—	—	-	-				35	40	49	85	40	49			
6	23	34	85	23	34				36	39	49	85	39	49			
7	28	35	85	28	35				37	42	48	85	42	48			
8	26	37	85	26	37				38	41	48	85	41	48			
9	30	38	85	30	38				39	35	47	85	35	47			
10	26	39	85	26	39				40	37	47	85	37	47			
11	31	39	85	31	39				41	42	47	85	42	47			
12	34	39	85	34	39				42	30	47	85	30	47			
13	15	40	85	15	40				43	40	46	85	40	46			
14	34	41	85	34	41				44	42	46	85	42	46			
15	17	41	85	17	41				45a	35	45	85	35	45			
16	37	42	85	37	42				46	33	44	85	33	44			
17	36	43	85	36	43				47	30	43	85	30	43			
18	39	43	85	39	43				48	24	43	85	24	43			
18a	36	44	85	36	44												
19	37	44	85	37	44				48a	26	42	85	26	42			
20	37	45	85	37	45				49	27	42	85	27	42			
21	42	47	85	42	47				50	23	41	85	23	41			
22	38	48	85	38	48				50a	28	41	85	28	41			
23	42	48	85	42	48				51	27	40	85	27	40			
24	41	48	85	41	48				52	16	39	85	16	39			
25	42	48	85	42	48				53	11	38	85	11	35			
26	42	49	85	42	49				54	—	—	—	—	—			

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#9 cont

b	n	Lutu	Hutu	u	Lutu	u	Lutu	Alu		n	Lutu	Hutu	n	Lutu	Li	Hutu	Alu
55	21	37	85	21	37				84a	6	20	85	6	20			
56	27	37	85	27	37				85	4	20	85	4	20			
57	27	36	85	27	36				85a	7	19	85	7	19			
58	21	36	85	21	36				86	5	19	85	5	19			
59	15	35	85	15	35				87	8	19	85	8	19			
60	25	34	85	25	34				88	8	18	85	8	18			
61	14	34	85	14	34				89	7	18	85	7	18			
62	19	33	85	19	33				90	7	17	85	7	17			
63	7	33	85	7	33				91	4	16	85	4	16			
64	10	32	85	10	32				92	8	16	85	8	16			
65	7	31	85	7	31				93	9	15	85	9	15			
66	15	31	85	15	31				94	4	14	85	4	14			
67	5	30	85	5	30				95	6	14	85	6	14			
68	8	30	85	8	30				96	3	13	85	3	13			
69	11	29	85	11	29				96a	5	12	85	5	12			
70	8	29	85	8	29				97	5	11	85	5	11			
71	10	28	85	10	28				98	2	11	85	2	11			
72	12	28	85	12	28				99	5	10	85	5	10			
73	8	27	85	8	27				100	2	10	85	2	10			
74	0	27	85	0	27												
75	7	26	85	7	26												
76	5	25	85	5	25												
77	6	25	85	6	25												
78	9	24	85	9	24												
79	9	24	85	9	24												
80	8	23	85	8	23												
81	5	22	85	5	22												
82	8	22	85	8	22												
83	11	21	85	11	21												
84	7	21	85	7	21												

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X 13033

Reduced to 105

#2

	n	mtn	Htmtn	n	mtn	n	mtn	Δm
1	2	6	106	2	6			
2	—	—	—	—	—			
3	12	17	106	12	17			
3a	13	17	106	13	17			
3b	—	—	—	—	—			
4	6	16	106	6	16			
4a	8	12	106	8	12			
5	4	12	106	4	12			
5a	9	11	106	9	11			
5b	7	9	106	7	9			
5c	5	8	106	5	8			
6	2	8	106	2	8			
6a	3	6	106	3	6			
7								
8								

#3

	n	mtn	Htmtn	n	mtn	n	mtn	Δm
1	3	5	107	3	5			
2	—	—	—	—	—			
3	11	17	107	11	17			
3a	—	—	—	—	—			
3b	—	—	—	—	—			
4	6	17	107					
4a	—	—	—	—	—			
5	5	14	107	5	14			
5a	—	—	—	—	—			
5b	8	11	107	8	11			
5c	—	—	—	—	—			
6	2	8	107	2	8			
6a	—	—	—	—	—			
7	—	—	—	—	—			

#4

	n	mtn	Htmtn	n	mtn	n	mtn	Δm
1	0	6	105	0	6			
2	—	—	—	—	—			
3	—	—	—	—	—			
3a	—	—	—	—	—			
3b	—	—	—	—	—			
4	4	17	105	4	17			
4a	12	14	105	12	14			
5	0	13	105	0	13			
5a	10	13	104	10	13			
5b	—	—	—	—	—			
5c	—	—	—	—	—			
6	0	7	104	0	7			
6a	2	5	104	2	5			
7	—	—	—	—	—			

#7

	n	mtn	Htmtn	n	mtn	n	mtn	Δm
1	—	—	—	—	—			
2	—	—	—	—	—			
3	—	—	—	—	—			
3a	—	—	—	—	—			
3b	—	—	—	—	—			
4	14	20	106	14	20			
4a	—	—	—	—	—			
5	11	16	106	11	16			
5a	—	—	—	—	—			
5b	—	—	—	—	—			
5c	11	14	105	11	14			
6	8	12	105	8	12			
6a	—	—	—	—	—			
7	—	—	—	—	—			

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X 13033 cont.

	#8								#21							
	n	mtn	Hmtn	n	kurt	n	mtn	Δm	n	mtn	Hmtn	n	mtn	n	mtn	Δm
1	8	4	105	8	4				5	7	107	5	7			
2	35	12	105	35	12				—	—	—	—	—			
3	22	14	105	22	14				—	—	—	—	—			
3a	—	—	—	—	—				—	—	—	—	—			
3b	—	—	—	—	—				—	—	—	—	—			
4	19	15	105	19	15				2	8	107	2	8			
4a	—	—	—	—	—				5	8	107	5	8			
5	18	16	105	18	16				1	8	107	1	8			
5a	—	—	—	—	—				5	8	107	5	8			
5b	—	—	—	—	—				—	—	—	—	—			
5c	—	—	—	—	—				—	—	—	—	—			
6	20	18	105	20	18				1	4	107	1	4			
6a	—	—	—	—	—				—	—	—	—	—			
7	—	—	—	—	—											
8	19	14	105	19	14											
9	22	13	105	22	13											
10	7	8	104	7	8											
10a	5	6	104	5	6											
3																
3a																
3b																
4																
4a																
5																
5a																
5b																
5c																
6																
6a																
7																

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X 13033 #9

#5

	n	meter	theta	n	meter	n	meter	Δm	n	meter	theta	n	meter	n	meter	Δm
4	12	17	105	12	17											
5	–	–	–	–	–											
6	11	19	105	11	19				15	2	104	15	2			
7	16	20	105	16	20											
7a																
~~8~~	17	21	105	17	21											
8	15	22	105	15	22											
~~9x~~	17	24	105	17	24											
10	14	24	105	14	24											
11	20	25	105	20	25											
12	21	25	105	21	25											
13	20	26	105	20	26											
14	21	27	105	21	27											
15	23	27	105	23	27											
16	24	28	105	24	28											
17	23	29	105	23	29											
18	25	30	105	25	30											
18a	22	31	105	22	31											
19	23	31	105	23	31											
20	24	33	105	24	33				13	6	104	13	6			
21	28	34	105	28	34				8	6	104	8	6			
22	24	35	105	24	35				9	6	104	9	6			
23	29	36	105	29	36				10	6	104	10	6			
24	~~37~~	36	105	27	36				11	6	104	11	6			
25	30	36	105	30	36				8	6	104	8	6			
26	29	36	105	29	36				9	6	104	9	6			
27	29	37	105	29	37				12	6	104	12	6			
28	25	38	105	25	38				10	6	104	10	6			
29	29	38	105	29	38				9	5	104	9	5			
30	23	38	104	23	38				–	–	–	–	/			

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	II 9								# 5							
	n	m	t	n	m	n	m	Δm	n	m	t	n	m	n	m	Δm
31	28	38	104	28	38				9	5	104	9	5			
32	33	38	104	33	38											
33	35	38	104	35	38											
34	27	38	104	27	38											
35	26	37	104	26	37											
35a	29	36	104	29	36											
36	25	36	104	25	36											
37	28	36	104	28	36											
38	26	36	1104	26	36											
39	23	35	104	23	35											
40	24	35	104	24	35				8	5	104	8	5			
41	20	34	104	20	34				17	5	104	17	5			
42	16	34	104	16	34				12	5	,04	12	5			
43	26	33	104	26	33				12	5	104	12	5			
44	28	33	104	28	33											
45	18	32	104	18	32											
46	20	31	104	20	31											
47	17	30	104	17	30											
48	13	29	104	13	29											
48a	14	29	104	14	29											
49	15	28	104	15	28				15	5	104	15	5			
50	12	28	104	12	28				9	5	104	9	5			
51	14	26	104	14	26											
52	11	26	104	11	26											
53	6	25	104	6	25				14	5	104	14	5			
54	5	23	104	5	23				10	4	104	10	4			
55	10	23	104	10	23											
56	14	22	104	14	22											
57	14	21	104	14	21											

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X13033 #9 cont.

	N	Intn	Hunter	u	Intn	u	Intn	Obs
58	10	20	104	10	20			
59	6	20	104	6	20			
60	13	19	104	13	19			
61	5	19	104	5	19			
62	9	18	104	6	15			
63	2	17	104	2	17			
64	3	17	104	3	17			
65	3	15	104	3	15			
66	7	15	104	7	15			
67	4	14	104	4	14			
68	2	13	104	2	13			
69	5	13	104	5	13			
70	3	12	104	3	12			
71	4	12	104	4	12			
72	5	12	104	5	12			
73	3	11	104	3	11			
74	2	10	104	2	10			
75	—	—	—	—	—			

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Plates of η Carinae region. Identifications.

No.	Star	H.D.			M	
1						
2	HR 4228		10 44.2	-59 24	6.12	A0
3	CPD -59°2713		10 43.9	-59 21	6.69	B5 -
4						
5	HR 4210		10 41.2	-59 10	var.	Pec
6		↑			↑	
7	HD 93027	93027	10 39.4	-59 37	8.9 → 6.6	B3 -
		93206	40.1	59 36	6.7	Bo Ocp -
8	HD 93028	93028	~~10 39.4~~	~~-59 41~~	~~8.6~~	~~Oe5~~
9						
10						
11						
12						
13	-59°2447		10 37.4	-59 27	7.6	B3 -
14	HR 4188		~~10 45.5~~ 10 37.4	~~-58 48~~ -59 9	6.48	Ocp
15						
16						
17						
18						
19						
20	HR 4239		10 45.5	-58 48	6.10	A0
21	HD 94345		10 48.2	-59 25	8.3	B8 -

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Plates of η Carinae

	14939	14925	13408	13413	13371	13033	13035	Sp.	Mag.	Pkg.	For reduction curves
1	✓							~~B0~~		~~6.6~~	13939 2,3,7,4,(6,13,)(8,14)
2	✓			✓	✓	✓		A0	6.12	6.1 (A2p)	14925 (8,14)
? 3	✓			✓	✓	✓		B5	6.69	5.8	13408 (8,14)
4	✓			✓	✓	✓		A0		6.2	13413 2,3,7,21,4,9 (8,14)
5	✓	✓	✓	✓	✓	✓	✓	η Carinae			13371 2,3,7,21,4,9, -
✓ 6	✓							B3	8.9		13033 2,3,7,21,4,9, -
7	✓	✓	✓	✓	✓	✓	✓	B0	6.64	6.6	13035 (7,9) (8,14)
8	✓	✓	✓	✓	✓	✓	✓	Bcp	6.71	6.3	
9				✓	✓	✓	✓	K5	6	6.9	
10	✓	✓									
11	✓	✓	✓	✓	✓						
12	✓	✓									
✓ 13	✓	✓	✓					B3	7.6	7.3	
14	✓	✓	✓	✓		●	✓	Bcp	6.48	.6.3	
15	✓	✓									
16											
17			✓								
18			✓								
19			✓								
✓ 20					✓	✓		A0	6.10	6.10	
✓ 21				✓	✓	✓		~~B8~~ A0	8.3 ✓	6.8	HD 94473
22				✓							

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Check Reductions

Jo 83

X13771

No. 4			No. 20			No. 21			No. 6			Mean A			η Carinae	Mean A
11	[84]	11 ✓	17	83	17 ✓	14	76	15 ✓	9	79	9 ✓	211	174	-37	2	80
25	84	25 ✓	33	83	33 ✓	21	76	22 ✓	20	80	21	136	104	-32	5	80
37	84	37 ✓	44	83	44 ✓	26	77	27 ✓	29	80	30	92	71	-21	6	80
40	83	40 ✓	48	83	48 ✓	27	77	28 ✓	33	79	34	75	64	-11	8	79
41	83	41 ✓	48	83	48 ✓	27	77	28 ✓	33	79	34	75	63	-12	8	79
41	83	41 ✓	47	[38]	47 ✓	27	78	28 ✓	34	79	35	70	64	-6	8	79
41	83	41 ✓	47	83	47 ✓	27	79	28 ✓	33	79	34	75	64	-11	7	79
39	82	39 ✓	44	83	44 ✓	24	80	24 ✓	31	79	32	83	74	-9	4	78
36	82	36 ✓	40	83	40 ✓	22	81	22 ✓	30	79	31	87	83	-4	2	78
28	82	28 ✓				17	82	17 ✓	24	79	25	115	119	+4		
11	82	11 ✓				7	83	7 ✓	11	78	11	198	212	+14 ~~+10~~		

For mean A o

	4	20	21	Σ	mean
a	198	167	168	523	174
b	115	68	130	313	104
c	63	45	106	214	71
d	54	37	101	192	64
e	51	37	101	189	63
f	51	39	101	191	64
g	51	39	101	191	64
h	57	44	120	221	74
i	66	54	130	250	83
k	101	-	157	258	129 [119]
l	198	-	250	448	224 [212]

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198

X13413

Check reductions

No. 7		No. 11		Σ Mean		No. 8		Diff		No. 14		Diff	Σ Mean
25	108	15	142	250	125	17	135	-10	0	17	135	10	20
35	70	23	114	184	92	27	100	-8	8	25	108	16	24
42	43	28	97	140	70	35	70	-0	11	32	81	11	11
46	24	31	85	109	54	39	54	-0	12	36	66	15	12
47	20	32	81	101	50	40	50	-0	16	36	66	16	16
47	20	32	81	101	50	41	47	+3	19	36	66	16	13
47	20	31	85	105	52	41	47	+5	19	36	66	14	11
47	20	31	85	105	52	40	50	+2	16	36	66	14	12
46	24	30	89	113	56	40	50	+6	16	36	66	10	4
45	30	28	97	127	64	40	50	+14	20	35	70	6	8
44	34	27	100	134	67	40	50	+17	28	33	78	11	-6
43	39	26	104	143	72	39	54	+18	31	31	85	13	-5
41	47	25	108	155	78	39	54	+24	39	29	93	15	-9
40	56	24	111	161	80	38	59	+21	32	29	93	13	-8
39	54	22	117	167	84	37	63	+21	34	28	97	13	-8
37	63	19	127	190	95	34	74	+21	40	26	104	19	-2
33	78	15	142	220	110	29	93	+17	27	21	120	10	-7
27	100	11	159	259	130	24	111	+19	28	16	139	9	-10

Arbitrary interval from 7 to 11 is $0^m.6$

No. 8 is in agreement with No. 8 of X13771

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