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6

Apertured MC plates

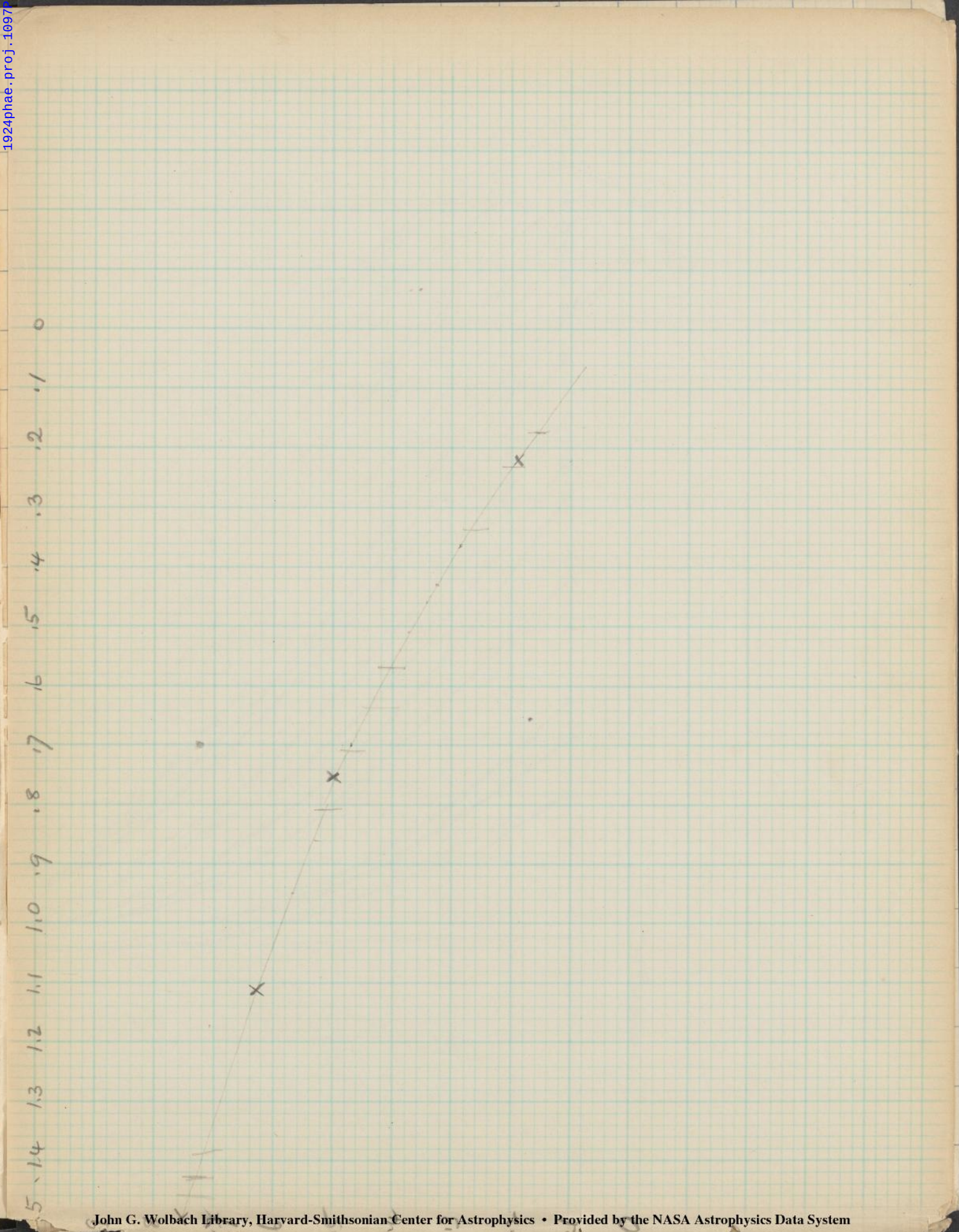
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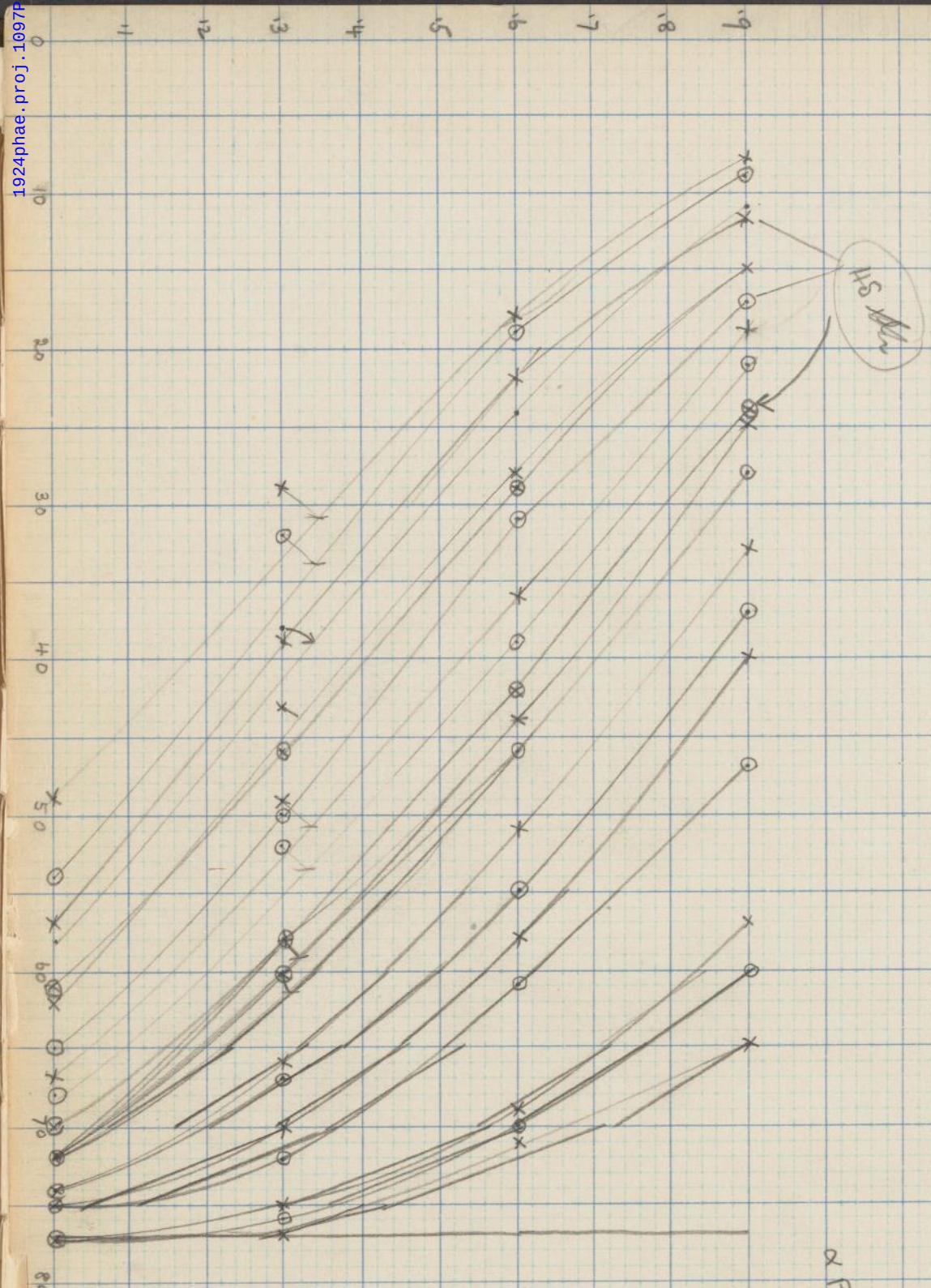
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Apertured spectra

Reductions from measures of microphotometer traces contained in Book 3, p 99 onwards.

An index to the plates, traces, stars, records, measures, & reductions, is contained in Book 3, p. 218

p. 4-16 contain tests of the consistency of the results from different apertures.

Method. Examine increase of deflection made for a given deflection by doubling the aperture.

Result. Spectra give consistent results

Differences of total deviation do not produce proportional differences of deflection. The curves are smoother if no correction for total deviation is applied. It is inferred that uncorrected measures should be used, & that differences of total deviation are due to

plate fog

inaccuracy in drawing the reference line

Derivation of intensities from the measures is contained in pp 20 onwards

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MC 20800 Altair. Book 3, p. 136, 156. Consistency
Apertures 1, 2, 3.

l = light interrupted	Aperture 1	2	3	Ratios 1/2	2/3	m + n = light transmitted I	II	III	II/I	III/II
	17.2	3.0	0.0	5.73	–	23.7	37.5	41.5	~~2.85~~ 1.58	1.12
	21.5	6.0	2.0 / 1.0	3.6	4.0	20.5	35	39.0	1.71	1.17
	18.2	4.0	0.5	4.5	8.0	22.9	38	39.0	1.66	1.03
	5.0	1.0	0.0	5.0	–	36.5	42	40.0	1.16	0.96
	7.0	1.0	0.5	7.0	2.0	34.5	40	39.0	1.16	0.98
	24 ~~18.5~~	7	2	3.4	3.5	16.9	33	39	2.02	1.18
	29	13	4	2.2	3.25	12.9	27	37	2.18	1.36
	31	16	6	~~2.0~~ 1.92	2.66	09.9	24	35	2.45	1.46
	32	17	7	~~1.88~~ 1.88	2.42	8.9	23	34	2.57	1.48
	27	12	6	2.25	2.0	15	29	35	1.93	1.21
	32	17 / 17.5	8.5	1.85	2.06	10	24	33	~~1.40~~ 2.40	1.37
	33	18.5 / 19	9	1.76	2.01	9	23	32	~~1.44~~ 2.60	1.38
	34	19 / 20	10	1.74	1.95	8	22	31	~~1.50~~ 2.75	1.41
	24	8	2	3.0	4.00	17	34	37	2.00	1.09
	29	13	4	2.22	3.25	12	29	35	2.42	1.20
	31	16	6	1.94	2.66	10	26	33	2.60	1.27
	32	17	6.5	1.88	2.61	9	25	33	2.77	1.32
	11	3		3.66		30	~~40~~ 38	~~44~~	1.28	
	17	5		3.40		24	36		1.50	
	18.5	–				2				
Sep 1st (1)				These		32	40		1.25	
				ratios are		25	38		1.52	
				useless		22	36		1.64	
				∴ of the		21	35.5		1.73	
				small						
				numbers						
				involved –						

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NC 2164b α Cassiopeiae Book 3 p. 110, 164 Consistency plot (2)

ap.	1 α	(m+n) 3	(m+n) 4	3/4
	37	41	41.5	1.04
	32	41	40.5	0.98
	1.5	15	25	1.67
	2.0	14	24.5	1.75
	3	13	29	1.71
		7.5	18.5	2.33
		4.5	12.5	2.78
		5.5	14	2.55

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MC 21640 α Cygni Book 3, p. 1~~44~~

Table A.

(m+n) values from orig. measures

aperture	1a	2	3	4
~~23~~	3	9	18.5	~~27~~
~~27~~	3	~~16~~	15	24.5
~~26~~	4	8.5	15	25.5
~~23~~	7	12	18.5	30
	6.5	11	21	29.5
	13	19.5	27	31.5
	22	25.5		
	26	28		
	~~3~~ 2.5	~~7~~ 7	~~16.5~~ 15.5	26
	~~2.5~~	~~7~~	~~15.5~~	25
	—	5	11	19
	—	4	9.5	18
	3	5.5	12	22.5
	3	4.5	10	20.5
	5	10	~~19~~ 19	28
	4	8	17	26.5
	6	11	19	28.5
	5	9.5	17	27.5
	11	17.5	25	
	9	17.5	24	

Consistency

(Not corrected for variations in (l+m+n)

Table C

1a	(1a)/(2)	2	(2)/(3)	3	(3)/(4)	(1b)
3	3.0	9	2.05	18.5	1.46	3.2
3	2.0	6	2.50	15	1.64	4.0
4	2.12	8.5	1.76	15	1.70	4.0
7	1.71	12	1.54	18.5	1.62	8.4 7.6
6.5	1.69	11	1.91	21	1.40	
13	1.50	19.5	1.38	27	1.16	11.8
22	1.16	25.5	—	16.5	1.58	
26	1.12	28	—	15.5	1.61	
3	2.33	7	2.35	11	1.73	
2.5	2.80	7	2.20	9.5	1.90	
3	1.83	5	2.20	12	1.88	
~~2.5~~ 3	1.50	4	2.37	10	2.05	
5	2.0	5.5	2.18	19	1.48	
4	2.0	4.5	2.23	17	1.56	
6	1.83	10	1.90	19	1.50	
5	1.99	8	2.12	17	1.61	
11	1.61	11	1.80			
~~29~~ 9	1.97	9.5	1.79			
		17.5	1.43			
		17.5	1.37			

For plot, see fig. 3.

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Total deviation varied during the series from 30 to 33 scale divisions.

Mean deviation for 1a = 30 1b = 31.7

" " " 2 = 29.5

" " " 3 = 31.9

" " " 4 = 32.3

Reducing each series to 30.0

Factor for 1a = 1 1b

" " 2 = ×0.985

" " 3 = ÷1.06

" " 4 = ÷1.08

B Reduced from Table A.

Aperture (1b) 1a	2	3	4
3	8.86	17.4 ~~19.6~~	25.0 ~~29.2~~
3	5.91	14.2 ~~15.9~~	22.7 ~~26.5~~
4	8.38	14.2 ~~15.9~~	23.6 ~~27.5~~
7	11.83	17.4 ~~19.2~~	~~19.8~~ 27.7 ~~32.4~~
6.5	10.83	19.8 ~~21.8~~	~~22.3~~ 27.3 ~~31.7~~
13	19.20	25.5 ~~28.0~~	~~28.6~~ 30.2 ~~34.0~~
22	25.20	—	— —
26	~~27.60~~	—	— —
3	~~5.43~~ 6.90	15.6 ~~17.2~~	~~17.5~~ 24.1 ~~28.1~~
2.5	~~4.44~~ 6.90	14.6 ~~16.1~~	~~16.4~~ 23.2 ~~27.0~~
–	4.90	10.4 ~~11.4~~	~~11.7~~ 17.6 ~~20.5~~
–	3.90	8.9 ~~9.85~~	~~10.1~~ 16.7 ~~19.4~~
3	5.43	11.3 ~~12.43~~	~~12.7~~ 20.8 ~~24.3~~
3	4.44	9.4 ~~10.69~~	~~10.6~~ 19.0 ~~22.2~~
5	9.85	17.9 ~~19.76~~	~~20.2~~ 26.0 ~~30.3~~
4	7.88	16.0 ~~17.67~~	~~18.0~~ 24.5 ~~28.6~~
6	10.83	17.9 ~~19.76~~	~~20.2~~ 26.4 ~~30.7~~
5	9.35	16.0 ~~17.62~~	~~16.0~~ 25.5 ~~27.7~~
11	16.24	23.6 ~~26.0~~	~~30.5~~
9	16.24	22.6 ~~24.9~~	~~25.4~~

D from Table B.

m+n 1a	R	m+n 2	R	m+n 3	R
3	2.86	8.86	1.96	17.4	1.44
3	1.96	5.91	2.4	14.2	1.60
4	2.10	8.38	1.7	14.2	1.66
7	1.69	11.83	1.47	17.4	1.59
6.5	1.67	10.83	1.84	19.8	1.38
13	1.48	19.2	1.32	20.5	1.18
22	1.14	25.2		15.6	1.54
26	1.06	27.6		14.6	1.59
3	2.30	6.9	2.26	10.4	1.69
2.5	2.75	6.9	2.12	8.9	1.88
3	1.80	4.9	2.03	11.3	1.84
~~2.5~~ ×3	~~2.77~~ 1.46	3.9	2.28	9.4	2.06
5	1.96	5.4	2.09	17.9	1.45
4	1.98	4.4	2.13	16.0	1.53
6	1.80	9.8	1.83	17.9	1.48
5	1.87	7.8	2.05	16.0	1.60
11	1.48	10.8	1.66		
×9	1.80	9.3	1.70		
		16.2	1.46		
		16.2	~~1.45~~		

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MC 21722 δ Canis Majoris Book 3, p. 152. Consistency

Line	Values of m + n, unreduced. 1a	2	3	4
3933	74.5	81	–	–
3970	75	81	77	–
4101	41.8	56	67.5	69
4215		48	62.5	–
4227		50	65	68.5
4326	32.5	46	61.5	66
4340	(39.5)	54	{67.5 / 68}	69
4444	27	41.5	58	67
4861	31	46	62	72
	30			

Ratios	
74.5	1.09
75.0	1.08
41.8	1.34
32.5	1.42
39.5	1.36
27.	1.48
31	1.48
81	0.96
56	1.20
48	1.30
50	1.30
46	1.34
54	1.25
41.5	1.39
46.	1.35
67.5	1.02
65	1.06
61.5	1.07
67.5	1.01
58.	1.15
62	1.16

Total deviations (mean)

1a = 73.6

2 = 78.6

3 = {75.7 (4861, 4444, 4340 1a) / 73.4 (rest)}

4 = {75 (4861) / 70.0}

Reducing all to 78.6

Factor for 1a is × 1.07

2 .. × 1.00

3 .. × 1.04 / × 1.067

4 .. × 1.05 / × 1.12

See plot 6

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under the supposition that deviation ∝ total deviation

Values of (m+n) corrected				Ratios.	
1a	2	3	4		
79.8	81			79.8	1.02
80.2	81	82.3		80.2	1.01
44.7	56	72.2	77.2	44.7	1.25
	48	66.9		34.7	1.32
	50	69.7	76.7	42.2	1.28
34.7	46	65.8	73.8	28.8	1.44
42.2	54	72.6	~~76~~	33.2	1.39
28.8	41.5	69.6	75.	32.1	-
33.2	46	60.2 64.4	72.9	81	1.02
32.1				56	1.29
				48	1.39
				50	1.39
				46	1.43
				54	1.32
				41.5	1.45
				46	1.40
				72.2	1.07
				69.7	1.10
				65.8	1.12
				71.1	1.07
				60.2	1.24
				64.4	1.13

See plot 5

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MC 2171 Capella

Line	Values of (m+n)					Consistency Ratios (m+n)	(R)	(m+n)	R
	1b	1a	2	3	4	36.5	1.37	32	1.44
3933	37	36	50	60	66	29	1.36	30	1.57
3970	30	28	39 / 40	56 / 54	64	5	2.40	22	1.73
4101	5.5	4.5	12	20	38	3.5	2.30	31	1.58
4215	4	3	8	16.5	31.5	5.2	2.21	20	1.79
4227	6	4.5	11	19.5	36.5	4	2.0	60	1.10
4326	4	–	8	15.5	29.5	3.7	2.44	55	1.16
4340	4.5	3	9	17.5	31.5	2.2	2.26	20	1.90
4444	2.5	2	5	11	21	4.5	1.67	16.5	1.91
4861	4.5		7.5	17.5	29.5	30	1.37	49.5	1.82
3933 l_1	30		41	58	64	20	1.55	15.5	1.90
$2l_1$	~~20~~ 26		31	49	59	30	1.50	17.5	1.80
$1l_2$	30		45	54	64.5	20	1.60	11	1.99
$2l_2$	~~20~~ 26		32	46	60	22	1.36	17.5	1.68
3970 $1l_1$	~~22~~ 28		30	47	59	16	1.37	58	1.10
$1l_2$	16		22	38	53	20	1.55	49	1.20
$2l_1$	20		31	49	60	11	1.82	54	1.19
$2l_2$	11		20	36	53	50	1.20	46	1.30
						39.5	1.39	47	1.25
						12	1.66	38	1.40
						8	2.06	49	1.22
						11	1.77	36	1.47
						8	1.95		
						9	1.99		
						5	2.20		
						7.5	2.26		
						41	1.42		
						31	1.58		
						45	1.70		

See plot (8)

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MC 21642
Sirius

Consistency

(m+n)

	1b	1a	2b	3	4
Hβ	4	3	7	10	23
Hγ	3	3	6	11	23
Hδ	3	4	9	13	27
Hε	9	9	14	18	30
Hζ	14	14	20	25	35
Hη	25	25	32	31	34
Hθ	33	34	~~34~~ 37	35	35
Hι	35	37	~~40~~ 38	~~34~~	-
Hκ	~~38~~	38	~~44~~ 39		-
Hλ	39	39			-

From Plot 10

Change in aperture for change in m+n	Hβ	Hγ	Hδ	Hε	Hζ	Hη	Hθ	Hι	Hκ
0-4	2.9	2.9	–	–	–	–	–	–	–
4-8	2.2	2.4	2.4	–	–	–	–	–	–
8-12	1.15	1.15	1.7	2.4	–	–	–	–	–
12-16	0.35	0.35	0.85	1.3	2.6	–	–	–	–
16-20	–	0.25	0.45	0.8	1.6	–	–	–	–
20-24	–	–	0.25	0.5	1.0	2.5	–	–	–
24-28	–	–	–	0.35	0.8	~~2.1~~ 0.8	~~2.4~~	–	–
28-32	–	–	–	–	0.5	1.5	3.5	–	–
32-36	–	–	–	–	0.4	1.2	~~4.5~~ 2.3	4.5	–
36-40	–	–	–	–	–	–	–	2.7	4.4

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MC 20797

Arcturus	1b	1a	2	Consistency Ratio
4340	17	18	30	1.72
4326		22	32	1.45
4227	35	37	37	1.06
4215	24	24	32	1.33
4101	28	28	33	1.18
3970	37	39	36	0.95

plot (11)

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Reductions

Intensity differences, between line centre and cont. background, are determined by plotting either (ny) or (n + tm) against log aperture, and interpolating graphically.

Apertures for all except α Lyrae

ap.	area ap.	log ap.
1a	8	.90
1b	8	.90
2	4	.60
3	2	.30
4	1	.00

Apertures for α Lyrae

ap.	area ap.	log ap.
1	16	1.2
2	8	.90
3	4	.60
4	2	.30
5	1	.00

Intensity ratios are reduced to stellar magnitudes by dividing by 0.4

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Means are taken

(a) of all measures

(b) of all measures except those from curved parts of photographic characteristic curve and those from plates records of outstanding total deviation. These are the "Selected Means" and are inserted in red, as are the quantities from which they are derived.

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Characteristic curve flat up to about 30.

MC 20800, α Aquilae 3. p. 158

Line or point	n	m+n	log aperture for n	log aperture for m+n	diff.	diff in stellarmag.	Means
aperture 1 = 4×ap 2 = 8×ap 3	Hβ	10.2	23.7	.903	.62	.28	0.70 ✓ 0.70
	" $1l_1$		17	.90	.78	.12	0.30 ✓ 0.30
	$2l_1$		12	.90	.83	.03	0.07 ✓ 0.07
	$3l_1$		10	.90	.90	.00	0.00 ✓ 0.00
plot	$4l_1$		9	.90	.92	−.02	−0.02 ✓ −0.02
13	$1l_2$		19	.90	.74	.16	0.40 ✓ 0.40
	$2l_2$		14	.90	.84	.06	0.15 ✓ 0.15
	$3l_2$		13	.90	.85	.05	0.12 ✓ 0.12
	$4l_2$		11	.90	.89	.01	0.02 ✓ 0.02
	Hγ	6.5	20.5	.90	.57	.33	0.82 ✓
	$1l_1$	6.5	15	.90	.71	.19	0.49 ✓
	$2l_1$	6.5	10	.90	.83	.07	0.17 ✓
	$3l_1$	6.5	9	.90	.85	.05	0.12 ✓
	$4l_1$	6.5	8	.90	.87	.03	0.07 ✓
	$5l_1$	6.5	7.5	.90	.88	.02	0.05 ✓
	$1l_2$		15	.90	.71	.19	0.49 ✓
	$2l_2$		10	.90	.83	.07	0.17 ✓
	$3l_2$		9	.90	.85	.05	0.12 ✓
	$4l_2$		8	.90	.87	.03	0.07 ✓
	$5l_2$		7	.90	.89	.01	0.02 ✓
	Hδ	8.9	23	.90	.62 ~~.50~~	.28	0.70 ✓
	$1l_1$		17	.90	.74 ~~.66~~	.16	0.40 ✓
	$2l_1$		12	.90	.84	.06	0.15 ✓
	$3l_1$		10	.90	.88	.02	0.05 ✓
	$4l_1$		9	.90	.90	.00	0.00 ✓
	$1l_2$		18	.90	.72	.18	0.45 ✓
	$2l_2$		12.5	.90	.83	.07	0.17 ✓
	$3l_2$		10	.90	.88	.02	0.05 ✓
	$4l_2$		9	.90	.90	.00	0.00 ✓
	$5l_2$		8	.90	.91	−.01	−0.02 ✓

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α Aql contd.

	Line	n	m+n	log af for m	log af for m+n	diff.	diff in stellar mag	
Ap. 1	He	14.5	36.5	.90	<.30	>.60	>1.50	
	$1l_1$		32		.57	.33	0.92	
	$2l_1$		25		.74	.16	0.40	✓
	$3l_1$		22.5		.78	.12	0.30	✓
	$4l_1$		21		.80	.10	0.25	✓
	$5l_1$		20		.82	.08	0.20	✓
	$1l_2$		31.5		.59	.31	0.78	
	$2l_2$		24		.76	.14	0.35	✓
	$3l_2$		19.5		.83	.07	0.17	✓
	$4l_2$		17.0		.86	.04	0.10	✓
	$5l_2$		15.5		.89	.01	0.02	✓
	$6l_2$		13.5		.92	−.02	−0.05	✓
	$7l_2$		12.5		.93	−.03	−0.07	✓
	$8l_2$		12		.94	−.04	−0.10	✓
	K	19.5	34.5	.90	.57	.33	0.82	
	$1l_1$		30.5		.70 ~~.88~~	.20	0.50	
	$2l_1$		24.5		.82	.08	0.20	✓
	$3l_1$		23		.84	.06	0.15	✓
	$4l_1$		-		-		-	
	$1l_2$		30.5		.70	.20	0.50	
	$2l_2$		22.5		.85	.05	0.12	✓
	$3l_2$		20.5		.88	.02	0.05	✓

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α Aql · ^{3}P.156

aperture		m tw	n*	log αf from m tw	log αf for n	diff	diff in stellar mag	
	Hβ	37.5	24.5	.60	.89	.29		
2	$1l_1$	33.5	"		.77	.17	0.42	
	2	27.5	"		.67	.07	0.17	✓
see ←	3	24.5	"		.60	.00	1.50	✓
plot 14	4	23.5	"		.57	-.03	-0.07	✓
	5	22.5	"		.56	-.04	-0.10	✓
	$1l_2$	33.5	"		.80	.20	0.50	
	2	29.5	"		.70	.10	0.25	✓
	3	28.5	"		.67	.07	0.17	✓
	4	28.5	"		.67	.07	0.17	✓
	5	28.0	"		.67	.07	0.17	✓
	6	28.5	"		-	-	-	✓
	7	29.0	"		-	-	-	✓
	Hγ	35.0	19.0	.60	.92	.32	0.80	
	$1l_1$	29.0, 30.0	19.0	.60	.82	.12	.30	
from two traces	2	24.0, 24.5	19.0	.60	.70	.10	.25	✓
	3	22.5, 23.0	19.0	.60	.68	.08	.20	✓
	4	21.5, 22.0	19.0	.60	.66	.06	.15	✓
	5	20.0, 20.5	19.0	.60	.63	.03	.07	✓
	$1l_2$	29.0, 30.5	19.0	.60	.82	.12	.30	
from two traces	2	24.0, 25.0	19.0	.60	.70	.10	.25	✓
	3	22.5, 23.0	19.0	.60	.68	.08	.20	✓
	4	20.0, 20.5	19.0	.60	.63	.03	.07	✓
	5	18.5, 19.0	19.0	.60	.60	.00	.00	✓
	Hδ	38.0	23.5	.60	.89 ?	.29	0.72	extrapolated
	$1l_1$	34.0	23.5		.81	.21	0.52	
	$2l_1$	29.0	23.5		.72	.12	0.30	✓
	$3l_1$	26.0	23.5		.66	.06	0.15	✓
	$4l_1$	25.0	23.5		.63	.03	0.01	✓
	$1l_2$	25.0	23.5		.82	.22	0.55	

graphically obtained result

* values of n are adopted from n at line center; such

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	m+n	n*	log af m+n	log af n	diff	diff maj	
$2l_2$	30.0	23.5	.60	~~.82~~	~~.22~~ .12	~~.55~~ .30	
$3l_2$	27.0	23.5	.60	~~.66~~	~~.06~~	~~.40~~ .15 ✓	
$4l_2$	24.5	23.5	.60	~~.71~~	~~.11~~ .01	~~.27~~ .02 ✓	
He_2	42.0	31.0	>1.0	.60	>.40	>1.00	extrapolated
$1l_1$	40.5	31.0	~~.60~~	.92	.32	.80	
2	38.0	31.0	.60	~~.79~~ .72	.19	.47	
3	36.0	31.0	.60	.74	.14	.35	
4	35.5	31.0	.60	.70	.10	.25	
5	—	—	.60	—	—		
$1l_2$	40.5	31.0	.60	.92	.32	.80	
2	37.5	31.0	.60	.85	.25	.62	
3	35.0	31.0	.60	.73	.13	.32	
4	33.5	31.0	.60	.66	.06	.15	
5	—		.60	—	—		
K	40.0	34.0	.91	.60	.31	0.77	
$1l_1$	38.0	34.0	.83	.60	.23	.57	
2	36.0	34.0	.70	.60	.10	.25	
$1l_2$	37.0	34.0	.81	.60	.21	.52	
2	33.5	34.0	.59	.60	.01	.02	
H5	41	38					

Apr. 3

Hβ	~~34.5~~ 39	~~41.5~~ 40	
Hγ	39	30	
	39	30	
H5	39	~~32~~	useless.
He_2	40	35	spectrum 3
K	39	36.5	too faint?

values are inserted in ink.

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Summary . α aquilae . Log ratio line center / background transmission.

in intensity ratio

ap.	Hβ	Hγ	Hδ	Hε	K
1	.28	.33	.28	.60*	.33
2	.29	.32	.29	>.40	.31

in stellar magnitudes

ap.	Hβ	Hγ	Hδ	Hε	K
1					
2					

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MC 21645 δ Cassiopeiae. Book 3, p 108, 154

Line or point		n	m + n	log ap$_n$	log ap$_{m+n}$	diff	diff stellar mag
aperture 1 a	Hβ	12	25	.90	.33	.57	1.42
	1l$_1$		19	.90	.60	.30	0.15
	2		14	.90	.83	.07	0.17
plot vs	3		12	.90	.90	.00	0.00
	1l$_2$		21.5	.90	.48	.42	1.05
	2		17	.90	.70	.20	0.50
	3		15.5	.90	.76	.14	0.35
	4		15	.90	.78	.12	0.30
	Hγ	7	20	.90	.28	.62	1.55
	1l$_1$		13	.90	.56	.34	0.85
	2		10	.90	.72	.18	0.45
	3		10	.90	.72	.18	0.45
	4		9	.90	.78	.12	0.30
	1l$_2$		16	.90	.44	.46	1.15
	2		11	.90	.66	.24	0.60
	3		10	.90	.72	.18	0.45
	4		8	.90	.84	.06	0.15
	5		7	.90	.90	.00	0.00
	Hδ	8	22	.90	.26	.64	1.60
	1l$_1$		17	.90	.47	.43	1.07
	2		12	.90	.70	.20	0.50
	3		10	.90	.80	.10	0.25
	4		9	.90	.85	.05	0.12
	5		9	.90	.85	.05	0.12
	6		8	.90	.90	.00	0.00
	1l$_2$		16	.90	.52	.38	0.95
	2		12	.90	.70	.20	0.50
	3		10	.90	.80	.10	0.25
	4		9	.90	.85	.05	0.12

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Line	n	m+n	log ap$_n$	log ap$_{m+n}$	diff	diff stellar mag
H_2	12	31.5	.90	−0.2?	.92	
$1l_1$		25	.90	.35	.55	1.37
2		20	.90	.60	.30	0.75
3		18	.90	.67	.23	0.57
4		17	.90	.72	.18	0.45
5		16	.90	.76	.14	0.35
6		15	.90	.79	.11	0.27
$1l_2$		29.5	.90	~~0.2?~~ 030	.87	2.17
2		24	.90	.39	.51	1.27
3		19	.90	.64	.26	0.65
4		16	.90	.76	.14	0.35
5		15	.90	.79	.11	0.27
6		14	.90	.83	.07	0.17
7		12	.90	.90	.00	0.00
K	15.5	~~27~~.5	.90	.32	.58	1.45
$1l_1$		23	.90	.60	.30	0.75
2		19	.90	.77	.13	0.32
3		18	.90	.81	.09	0.22
$1l_2$		23	.90	.60	.30	0.75
2		18.5	.90	.79	.11	0.27
3		16	.90	.89	.01	0.02
H_5	24	34	.90	÷ .30	.60	1.50
$1l_1$		34	.90	÷ .30	.60	1.50
2		32	.90	÷ .39	.51	1.27
3		31	.90	÷ .45	.45	1.12
4		30	.90	÷ .50	.40	1.00
H_2		34	.90	÷ .30	.60	1.50
2		31	.90	÷ .45	.45	1.12
3		29	.90	÷ .57	.33	0.82
4		27	.90	.65	.25	0.62

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δ Cas cont

Line or Ht.		n	mtn	log ap$_n$	log ap$_{mtn}$	diff	diff. stellar mag
Aperture 2 plot 15	Hβ	19	30	.60	0.06	.54	1.72
	1l_1		28	.60	.18	.42	1.05
	2		23	.60	.42	.18	0.45
	3		21	.60	.51	.09	0.22
	4		18	.60	.65	−.05	−0.12
	5		17	.60	.70	−.10	−0.25
	1l_2		27	.60	.25	.35	0.87
	2		24	.60	.37	.23	0.57
	3		23.5	.60	.39	.21	0.52
	4		23	.60	.42	.18	0.45
	5		23	.60	.42	.18	0.45
	Hγ	12	27	.60	.03	.57	1.42
	1l_1		22	.60	.20	.40	1.00
	2		17	.60	.37	.23	0.57
	3		15.5	.60	.45	.15	0.37
	4		15	.60	.47	.13	0.32
	1l_2		19	.60	.30	.30	0.75
	2		16	.60	.43	.27	0.67
	3		14	.60	.52	.08	0.20
	4		12	.60	.60	.00	0.00
	5		11	.60	.66	−.06	−0.15
	Hδ	14	29	.60	.00	.60	1.50
	1l_1		26	.60	.11	.49	1.22
	2		21	.60	.30	.30	0.75
	3		18	.60	.43	.17	0.42
	4		17	.60	.47	.13	0.32
	5		16	.60	.52	.08	0.20
	1l_2		26	.60	.11	.49	1.22
	2		21	.60	.30	.30	0.75

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Line	n	m+n	log a_n	log a_{m+n}	diff.	diff. stellar mag.
$3l_2$	14	18	.60	~~.22~~ .43	~~.38~~ .17	0.42
4		17	.60	~~.26~~ .47	~~.34~~ .13	0.32
5		16	.60	~~.40~~ .52	~~.20~~ .08	0.20
6		15	.60	~~.44~~ .56	~~.16~~ .04	0.10
H_ϵ	20	34	.60	−.24?	.84?	2.10 extrapolated
$1l_1$	20	32	.60	−0.4	.64	1.60
2		30.5	.60	.03	.57	1.42
3		26	.60	.30	.30	0.75
4		25	.60	.34	.26	0.65
5		24	.60	.39	.21	0.52
6		23	.60	.44	.16	0.40
7		22	.60	.49	.11	0.27
$1l_2$		31	.60	.00	.60	1.50
2		28	.60	.18	.42	1.05
3		25	.60	.35	.25	0.62
4		22	.60	.49	.11	0.27
5		21	.60	.55	.05	0.12
6		20	.60	.60	.00	0.00
7		19	.60	.64	−.04	−0.10
K	23	32	.60	.00	.60	1.50
$1l_1$		29	.60	.23	.37	0.92
2		26	.60	.41	.19	0.47
$1l_4$		28	.60	.30	.30	0.75
2		23	.60	.60	.00	0.00

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δ Cas cont. line centers only. For wings see p. 38

Line		n	m+n	log ap$_n$	log ap$_{m+n}$	diff	diff stellar mag.
Aperture 3	Hβ	26		.87	.30	.57	1.42
	Hγ	19		.92	.30	.62	1.55
	Hδ	21		.92	.30	.62	1.55
	Hε	26		1.10?	.30	.80	2.0 extrapolated
	K	28		.98	.30	.68	1.70 "
ap 4	Hγ	28		.52	.00	.52	1.30
	Hδ	29		.60	.00	.60	1.50
	Hε	31		.91	.00	.91	2.27
	K	32		.60	.00	.60	1.50
ap 1a	Hβ	11	24	.94	.37	.57	1.42
	Hγ	6	18	.94	.34	.60 .56	1.50
	Hδ	7	20.5	.94	.32	.62 .58	1.55
	Hε	10	29	.96	.12	.84 .78	2.10
	K	12	24	1.03 .90	.53	.50 .37	1.25
	H3	19	30	? .90	.51	.39	extrapolated both ends

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Summary.

Ratio $\frac{\text{line} \ldots \text{transmission}}{\text{background}}$ in apertures ratios, for

ε Cassiopeiae, line centers.

from aperture	Hβ	Hγ	Hδ	Hε	K	H3
1a	.57	.62	.64	.92	.58	.60*
1b	.57	.60	.62	.84	.50	—
2	.54	.57	.60	.84*	.60	—
3	.57	.62	.62	.80*	.68*	—
4	—	.52	.60	.91	.60	—

Extrapolated values marked by an asterisk

Line wings:—

	Hβ	Hγ	Hδ
1a	.30, .07, .00, — .05, .20, .42	.34, .18, .18, — .18, .24, .46	.43, .20, .10, — .10, .20, .38
1b	—		
2	.28, .17, .07, —, .04, .11, .22		
3	.30, .17, .19, —, .07, .20, .36		
4	— — —		

Hε	K	H3
.55, .30, .23, —, .14, .26, .51	.30, .13, .09, — .01, .01, .30	.60, .57, .45, —, .33, .45, .60

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MC 21/21

Capella. line centers only See also p. 58

ap.	Line	n	m+n	log ap n	log ap m+n	diff	diff. Stellar mag.
1b	3933 K	10	37	.90	~~.81~~ .21	~~.83~~ .69	1.72
1a	3933 K	10	36	.90	~~.84~~ .22	~~.81~~ .68	1.70
2	3933 K	19	50	.60	−.03	.63	1.57
3	3933 K	32	60	.97	~~.30~~	~~.67~~	1.67
4	3933 K	48.5	66	.69	~~.69~~ .00	~~.69~~ .69	1.72
					av.	.67	1.67 Mean
1b	3970 H	7	30	.90	.20	.70	1.75
1a	3970 H	6	28	.90	.23	.67	1.67
2	3970 H	13.5	39.5	.60	.02	.58	~~1.45~~
3	3970 H	24.0	56	~~.91~~ .99	.25	.74	1.85
(4	3970 H	41	64	.56	.00	.56	or more) 1.40
						.67	omitting ap. 4 1.67 Mean
1b	4215	2	4	.90	.70	.20	.50
1a	4215	2	3	.90	.80	.10	.15 .25 .31
2	4215	5	8	.60	.45	.15	.37
3	4215	13	18.5	.30	.14	.16	.40
4	4215	26.5	31.5	.12	.00	.12	.30
						.14	.35 Mean
1b	4227	2.5	6	.90	.55	.35	.87
1a	4227	2	4.5	.92	.84	.08	.22 .29 .55
2	4227	5	11	.60	.35	.25	.62
3	4227	12.5	19.5	.30	.10	.20	.50
4	4227	25.5	36.5	.26	.00	.26	.65
						.23	Mean .57

All parts of curve fairly flat.

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MC 21642 from p. 148 and p. 104 book 3

Sirius. Line centers only. From plot of n against log ap. No. 17a

ap.	Line	n	m+n	log ap$_n$	log ap$_{m+n}$	diff	diff. stellar mg.
1b	Hβ	0	4	.90	.30	<.60	<1.50
1a	Hβ	~~20~~	~~23~~	.90	.48	<.42	<1.05
2b	Hβ	2	7	.60	.12	.48	1.20
3	Hβ	4	10	.30	.00	.30	.75
4	Hβ	10	23	.90	—	—	—
1b	Hγ	0	3	.90	.30	<.60	<1.50
1a	Hγ	0	3	.90	.30	<.60	<1.50
2b	Hγ	0	6	.60	.13	<.47	<1.17
3	Hγ	3	8	.30	.04	.26	.65
4	Hγ	9	23	—	—	—	—
1b	Hδ	0	3	.90	.48	<.42	<1.05
1a	Hδ	0	4	.90	.30	<.60	<1.50
2b	Hδ	2	9	.60	.10	.50	1.25
3	Hδ	4	13	.30	−.02	.32	.80
4	Hδ	12	27	—	—	—	—
1b	Hε	1	9	.90	.07	.83	2.07
1a	Hε	2	9	.75	.07	.68	1.70
2b	Hε	~~3~~ 3	~~14~~ 20 14	.60	−.20 *	.80 *	2.00
3	Hε	6	18	—	—	—	—
4	Hε	10	30	—	—	—	—
1b	Hζ	3	14	.90	.13	.77	1.92
1a	Hζ	3	14	.90	.13	.77	1.92
2b	Hζ	6	20	.60	−.04	.64	1.60
3	Hζ	10	25	—	—	—	—
4	Hζ	18	35	—	—	—	—

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from plot of m + n against log ap. No. 18.

log ap n	log ap m + n	diff	diff. stellar mag.
1.05 *	.85	~~.40~~ >.20	2.50
1.05 *	.90	~~.25~~ >.15	>.37
.98	.60	.38	.95
.85	.30	.55	1.37
.30	.00	.30	.75
~~1.03~~			
1.03 *	.90	>.13	>.32
1.03 *	.90	>.13	>.32
1.03 *	.60	>.43	>1.07
.90	.30	.60	>1.50
.27	.00	.30	>.75
1.05 *	.92	>.13	>.32
1.05 *	.90	>.15	>.37
.98	.60	.38	.95
~~.81~~ .60	.30	~~.51~~ .57	1.42
.35	.00	.35	.87
–	–	–	–
–	–	–	–
–	–	–	–
1.05 *	.30	.75	1.87
.86	.00	.86	2.15
–	–	–	–
–	–	–	–
–	–	–	–
1.05 *	.30	.75	1.87
.69	.00	.69	1.72

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From plot 17a.

Sirius (cont.)		n	m+n	log ap$_n$	log ap$_{m+n}$	diff	diff stellar mag
ap.	Hη	9	25	.90	.06	.84	2.10
1b	Hη	9	25	.90	.06	.84	2.10
1a	Hη	14	31	—	—	—	—
2b	Hη	19	31	—	—	—	—
3	Hη	27	34	—	—	—	—
4	Hη						
1b	Hθ	18	33	.90	−0.7 *	.97	2.42
1a	Hθ	17	34	.92	−0.8 *	1.00	2.50
2b	Hθ	23	37	—	—	—	—
3	Hθ	27	35	—	—	—	—
4	Hθ	31	35	—	—	—	—
1b	Hε	24	35	.90	~~.00~~ ?	~~.90~~	>2.25
1a	Hε	24	37	.90	~~.00~~ ?	> .90	>2.25
2b	Hε	30	− 38	.60	~~.00~~ ?	> .60	>1.50
3	Hε	31	− 34	.30	< .00 ?	> .30	>.75
4	Hε	—	—	—	—	—	

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from plot 18

log ap$_n$	log ap$_{m+n}$	diff	diff. stellar mag.
–	–	–	
–	–	–	
–	–	–	
–	–	–	
.79	.00	.79	1.91
–	–	–	
–	–	–	
~~1.10~~ *	~~.60~~	~~.50?~~	
–	–	–	
–	–	–	
–	–	–	
–	–	–	
–	–	–	
–	–	–	
–	–	–	

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MC 21645 — δ Cassiopeiae. Line wings ✓

For adopted mean: all values except those with m+n greater than 25, and those from 1a and 2; for these the total deviation was too great

ap.	line	l+m+n	l	m	l+m	n	log ap$_n$	log ap$_{m+n}$	diff	diff. stellar mag
1a	Hβ1l$_1$	37	18	6.5	24.5	12.5	.—	..88	—	
1b	Hβ1l$_1$	34	~~16~~	7	23	11	.—	.91	—	
2		36	8	9	17	19	.88	.60	.28	.70
3		33	2	3	5	28	.60	.30	.30	.75
4		—	—	—	—					
1a	Hβ 2l$_1$	37	23	2.5	25.5	11.5	—	—	—	
1b		34	20	4	24	10	—	—	—	
2		36	13	5	18	18	.77	.60	.17	.42
3		33	4	3	7	26	.47	.30	.17	.42
4		—	—	—	—	—	—	—	—	
1a	Hβ3l$_1$	37	25	1	26	11	—	—	—	
1b		34	22	2	24	10	—	—	—	
2		36	15	2	17	19	.67	.60	.07	.17
3		33	5	4	9	24	.49	.30	.19	.47
4		—	—	—	—					
1a	Hβ1l$_2$	37	16.5	7	23.5	13.5	—	—	—	
1b		34	20	8	28	6	—	—	—	
2		36	9	7	16	20	.82	.60	.22	.55
3		33	5	3	8	25	.66	.30	.36	.90
4		—	—	—	—	—	—	—	—	
1a	Hβ2l$_2$	37	20	4	24	13	.93	.83	.10	~~.25~~
1b		34	23	4	27	7	—	—	—	
2		36	12	3	15	21	.71	.60	.11	~~.27~~
3		33	4	3	7	26	.50	.30	.20	.50
4		—	—	—	—	—	—	—	—	

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ap	line	l+m+n	l	m	l+m	n	log ap$_n$	log ap$_{l+m+n}$	diff	diff stellar mag.
1a	Hβ3l$_2$	37	21.5	2	23.5	13.5	.85	.80	.05	.12
1b		34	25	2	27	7	—	—	—	
2		36	12.5	2	14.5	21.5	.64	.60	.04	.10
3		33	3	2	5	28	.37	.30	.07	.17
4		—	—	—	—	—	—	—	—	

1a	Hγ 1l$_1$	37	24	6	30	7	0.98 —	0.55 —	.33 —	.82
1b		33	21	6	27	6	0.92 —	0.60 —	.32 —	.80
2	see plots 28 and 29	35	13	10	23	12	0.60	0.18	.42	1.05
3		34	7	8	15	19	0.90 0.30	0.60 0.02	.30 .28	.75 .70
4		33	2	3	5	28	0.69 — 0.24	0.30 — 0.00	.39 — .24	.97 .60

1a	Hγ 2l$_1$	37	27	3	30	7	0.90 —	0.70 —	0.20 —	.50
1b		33	24	2	26	7	0.90 —	0.77 —	0.13 —	.32
2		35	18	5	23	12	0.60	0.37	0.23	.57
3		34	10	5	15	19	0.81 0.30	0.60 −0.00	0.21 0.30	.52 .50
4		33	3	2	5	28	0.50 — 0.09	0.30 — 0.00	0.20 — 0.09	.50 .22

1a	Hγ 3l$_1$	37	27	2	29	8	.87 .92	.73 .85	.14 .07	.35 .17
1b		33	25	1	26	7	.93 —	.87 —	.06 —	.15
2		35	19.5	3	22.5	12.5	.60	.45	.15	.37
3		34	11	4	15	19	.75 .30	.60 .14	.15 .16	.37 .40
4		33	3	2	5	28	.46 — .11	.30 — .00	.16 — .11	.40 .27

1a	Hγ l$_2$	37	21	9	30	7	.85 —	.38 —	.47 —	1.17
1b		33	21	6	27	6	.93 —	.52 —	.41 —	1.02
2		35	16	9	25	10	.60 —	.30 —	.30 —	.75
3		34	7	8	15	19	.30 .60	.02 .30	.28 .30	.70 .75
4		33	2	3	5	28	.26 —	.00 —	.26 —	.65

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NC 21645 δ Cassiopeiae line wings continued

Ap.	line	l+w+tw	l	w	w+tb	n	log ap n	log ap w+tw	diff	diff stellar mag.
1a	Hγ2l$_2$	37	26	4	30	7	.90	.60	.30	.75
1b		33	24	2	26	7	.90	.75	.15	✓ .37
2		35	19	5	24	11	.60 .85	.40 .60	.20 .25	.50 ✓ .62
3		34	9	6	15	19	.30 .54	.10 .30	.20 .24	✓ .50 .60
4		33	3	2	5	28	.21	.00	.21	.52
1a	Hγ3l$_2$	37	27	2.5	29.5	7.5	.86	.67	.21	* .52
1b		33	25	1	26	7	.90	.83	.07	✓ .17
2		35	21	3	24	11	.60 .78	.48 .60	.12 .18	.30 ✓ .45
3		34	11	4	15	19	.30 .43	.16 .30	.14 .13	✓ .35 .32
4		33	4	1	5	28	.06	.00	.06	.15
1a	Hδ1l$_1$	36	19	9	28	8	17 .84	.48	.36	.90
1b		32 33	18 19	8 7	26 26	6 7	14 .92 .88	.60 .60	.32 .28	✓ .80 ✓ .70
2		36	10	12	22	14	26 .90 .60 .72	.60 .11 .72 .30	.30 .49 ~~.72~~ .42	.75 1.22 1.05
3		33	4	8	12	21	29 .30 .34	.00 .00	.30 .34	✓ .75 .85
4		33	1	3	4	29	32			
1a	Hδ2l$_1$	36	24	5	29	7	12 .88	.68	.20	.50
1b		32 33	22 23	4 3	26 26	6 7	10 .92 .88	.75 .75	.17 .13	✓ .42 ✓ .32
2		36	15	7	22	14	21 .60 .80	.30 .60	.30 .20	.75 .50
3 4		33	6	5	11	22	27 .30 .57	.06 .30	.26 .27	✓ .65
4		33	1	3	4	29	32 .00	-	~~.00~~	.67
1a	Hδ3l$_1$	36	26	3	29	7	10 .88	.75	.13	.32
1b		32 33	23 24	3 2	26 26	6 7	9 .92 .68	.80 .80	.12 .08	✓ .30 ✓ .20
2		36	18	4	22	14	18 .60 .74	.43 .60	.17 .14	.42
3		33	8	3	11	22	25 .30 .46	.16 .30	.14 .16	✓ .35 ✓ .35
4		33	2	2	4	29	32 .00	.14	.14	.40 .35

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ap.	line	l+m+n	l	m	n	l+m	n	log ap m+n	log ap m	log ap n	diff	diff stellar mag.
1a	Hδ1l$_2$	36	20	8	28	8	16	.84	.51	.33		.182
		32	18	8	26	6	14	.92	.60	.32	✓	.80
1b		33	19	7	26	7	14	.90	.60	.30	✓	.75
2		36	10	12	22	14	26	.60	.14	.46		1.15
								.90	.60	.30	✓	.75
3		33	4	8	12	21	29	.30	.03	.27	✓	.67
								.75	.30	.45		1.12
4		33	0	3	3	30	33	–	–	–		
1a	Hδ2l$_2$	36	24	4	28	8	12	.84	.68	.16		.140
		32	21	4	25	7	11	.90	.72	.18	✓	.45
1b		33	22	4	26	7	11	.90	.72	.18	✓	.45
2		36	15	7	22	14	21	.60	.30	.30		.75
							~~30~~	.60	.80	.20	✓	.50
3		33	6	5	11	22	27	.30	.10	.20	✓	.50
							~~37~~	.30	.57	.27		.167
4		33	1	2	3	30	32	–	–	–		
1a	Hδ3l$_2$	36	26	2	28	8	10	.84	.75	.09		.22
		32	23	2	25	7	9	.90	.80	.10	✓	.25
1b		33	24	2	26	7	9	.90	.80	.10	✓	.25
2		36	18	5	23	13	18	.60	.40	.20		.50
								.77	.60	.17	✓	.42
3		33	9	3	12	21	24	.30	.20	.10	✓	.25
4		33	2	1	3	30	31	.47	.30	.17		.42
		37	12	12	24	13	25	.86	.34	.52		1.30
1a	Hε1l$_1$	36	10	15	25	11	26	94	.30	.64		1.60
		32	11	11	22	10	21	.96	.54	.42	✓	1.08
1b		33	8	14	22	11	25	.94	.34	.60	✓	1.50
2		36	4	12	16	20	32	.60	–	–		
								–	.60	–		
3		33	1	6	7	26	32	.30	–	–		
								.85	.30	.55←		1.38
4		33	0	2	2	31	33	.00	–	–		
								–	.00	–		
1a	Hε2l$_1$	37	17	8	25	12	20	.90	.60	.30		.175
		36	16	8.5	24.5	11.5	20	.92	.60	.32		.80
1b		32	16	5	21	11	16	.94	.72	.22	✓	.55
		33	14	8	22	11	19	.94	.63	.31	✓	.77
2		36	5.5	10	15.5	20.5	30.5	.58	.02	.56		1.40
								.87	.60	.27	✓	.67
3		33	2	5	7	26	31	.30	.00	.30	✓	.75
								.72	.30	.42		1.05
4		33	0	1	1	32	33		–	–		

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MC 21645 δ Cassiopeiae line wings continued

ap	line	l_{tm} tm	l	m	l_{tm}	m	log ap_m	log ap_{mtm}	diff	diff Stellar mag.
		37	19	5	24	13	18			
1a	$H\varepsilon 3l_1$	36	18	6	24	12	18			
		32	18	3	21	11	14			
1b		33	17	5	22	11	16			
2		36	10	6	16	20	26			
3		33	4	3	7	26	29			
4		33	1	1	2	31	32			
		37	7½	16	23.5	13.5	29.5			
1a	$H\varepsilon 1l_2$	36	9	16.5	25.5	10.5	36.5			
		32	9	13	22	10	23			
1b		33	7	16	23	10	26			
2		36	5	12	17	19	31			
3		33	1	6	7	26	32			
4		33	0	2	2	31	33			
		37	13	11	24	13	24			
1a	$H\varepsilon 2l_2$	36	14	11	25	11	22			
		32	15	7	22	10	17			
1b		33	14	9	23	10	19			
2		36	8	8.5	16.5	19.5	28			
3		33	2	5	7	26	31			
4		33	0	2	2	31	33			
		37	18	7	25	12	19			
1a	$H\varepsilon 3l_2$	36	18	7	25	11	18			
		32	19	4	23	9	13			
1b		33	18	5	23	10	15			
2		36	11	6	17	19	25			
3		33	4	4	8	25	29			
4		33	0	2	2	31	33			
		37	14	7	21	16	23			
1a	$K1l_1$	32	14	5	19	13	18			
1b		32	13	8	21	11	19			
2		36	7	6	13	23	29			
3		33	2	2	4	29	31			
4		34	0	2	2	32	34			

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		l+m+m	l	m	l+m	m	log ap m m	log ap l+m+m	diff	diff stellar mag.
1a	K2l1	37	18	2	20	17	19			
		32	18	2	20	12	14			
1b		32	18	3	21	11	14			
2		36	10	2	12	24	26			
3		33	3	1	4	29	30			
4		34	1	1	2	32	33			
1a	K3l1	37	19	-			-			
		32								
1b		32					-			
2		36					-			
3		33					-			
4		34	1	1	2	32	33			
1a	K1l2	37	14	8	22	15	23			
		32	15	5	20	12	17			
1b		32	14	7	21	11	18			
2		36	8	5	13	23	28			
3		33	3	2	5	28	30			
4		34	1	2	3	31	33			
1a	K2l2	37	18½	3	21.5	15.5	18.5			
		32	19	1	20	12	13			
1b		32	19	3	22	10	13			
2		36	13	1	14	22	23			
3		33	4	1	5	28	29			
4		34	2	1	3	31	32			
1a	K3l2	37	21	.5	21.5	15.5	~~19~~ 18.5			
1b										
2										
3										
4										

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MC 20790 α Lyrae. Line centers Book 3 p. 166

From plot of w against log ap.

ap.	Line	w	w'	w+w'	log ap w	log ap w+w'	diff	diff. stellar mag.	a
1	Hβ								1
2	Hβ								2
3	Hβ								3
5	Hβ								5
1	Hγ								1
2	Hγ								2
3	Hγ								3
5	Hγ								5
1	Hδ								1
2	Hδ								2
3	Hδ								3
5	Hδ								5
1	Hε								1
2	Hε								2
3	Hε								3
5	Hε								5
1	K								1
2	K								2
3	K								3
5	K								5
1	Hζ								1
2	Hζ								2
3	Hζ								3
5	Hζ								5

See page 64

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From plot of $m+n$ against log ap.

Ap.	Line	n	m	m+n	log ap$_n$	log ap$_{m+n}$	diff	diff. stellar mag.
1	Hβ							
2	Hβ							
3	Hβ							
5	Hβ							
1	Hγ							
2	Hγ							
3	Hγ							
5	Hγ							
1	Hδ							
2	Hδ							
3	Hδ							
5	Hδ							
1	Hε							
2	Hε							
3	Hε							
5	Hε							
1	K							
2	K							
3	K							
5	K							
1	Hζ							
2	Hζ							
3	Hζ							
5	Hζ							

See page 64

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MC 20797 Arcturus. Line centers only. Book 3 p. 162

From (m tn) against log ap. No. 1 q a

ap.	Line	n	m tn	log ap n	log ap m tn	diff	diff. mag.	diff. stellar mag.
1b	4101	18	28	—	.90	—	—	
1a	4101	17	28	—	.90	—	—	
2	4101	28	34	.60	.90	.30	.22	.15
1b	4215	16	24	—	.90	—	—	
1a	4215	16	24	—	.90	—	—	
2	4215	27	32	.79	.60	.19	.14	.47
1b	4227	15	35	.39 *	.90	.51 ?	.38	1.27
1a	4227	16	37	.33 *	.90	.57 ?	.43	1.42
2	4227	27	38	~~.36~~ *	.60	—	—	1.34
1b	4340	9	17	—	.90	—	—	
1a	4340	11	19	—	.90	—	—	
2	4340	21	30	.81	.60	.21	.16	.52

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From w against log ap. No. 19 b

ap	line	log ap w	log ap mtw	diff	diff mag.	Mean mag	
1b	4101	.89	.60	.29	.22		.72
1a	4101	.91	.60	.30	.22	.22	.75
2	4101	—	—	—	—		
1b	4215	.90	.69	.21	.16		.52
1a	4215	.90	.69	.21	.16	.15	.52
2	4215	—	—	—	—		
1b	4227	.90	—	—	—		
1a	4227	.90	—	—	—	.46	
2	4227	.60	—	— (order of) .75	.56		
1b	4340	.92	.71	.21	.16		.52
1a	4340	.88	.35	.23	.17	.16	.57
2	4340	.60	—	—	—		

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Mc 21646 α Cassiopeiae Line centers only Book 3 p 164

From (m+n) against log ap. No. 20

ap.	line	n	m+n	log ap$_m$	log ap$_{m+n}$	diff	diff (mag)	diff (mag)
1	3933	11	37	–	.90	–		
3	3933	27	41	–	.30	–	–	
4	3933	34.5	41.5	>.90	.00	>.90 (approx. 1.02)	.96	>2.25
1	3970	6	32	–	.90	–		
3	3970	21	41	–	.30	–		
4	3970	28.5	40.5	1.2*	.00	1.02*	.76	2.55
1	4101	0	1.5	– (.51)	.90 .30	– (.21)	–	–
3	4101	9	15	.57	.30	.27	–	.67 (.56)
4	4101	19	25	.18	.00	.18	.13	.45
1	4215	0	2	–	.90	–	–	–
3	4215	6.5	15	.68 .74	.30	(.44)	–	–
4	4215	15.5	24.5	.28	.00	.28	.21	.70
1	4227	0	3	–	.90	–	–	
3	4227	6	17	.76	.30	(.46)	–	–
4	4227	15.5	29	.33	.00	.33	.25	.82
3	4340	3.5	7.5	–	.90	–	–	–
4	4340	11.5	18.5	.19	.00	.19	.14	.47
3	4444	2.5	4.5	–	.90	–		
4	4444	8.5	12.5	.15	.00	.15	.11	.37
3	4861	3.5	5.5	–	.90	–	–	–
4	4861	10	14	.10	.00	.10	.07	.25

wrong reduction

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From (n) against log ap. No. 21

ap. line	log ap_n	log ap_{n+m}	diff	diff (mag)	Mean mag	diff (mag)
	.90	L.09 *	.99	.74		2.47
	.30	—	—	—	.75	—
	.00	—	—	—		—
	.90	−.08	.98	.73		2.45
	.30	—	—	—	.75	—
	.00	—	—	—		—
	>.90	.80	>.10	>.07		>.25
.56	.30	.12	.18	.13	.13	.45
	.00	—	—	—		—
	>.90	—	—	—		
	.30	.01	.29	.22	.21	.72
	—	—	—	—		—
	>.90	—	—	—		
	.30	−.40 *	.34	.26	.25	.85
	—	—	—	—		—
	.30	.15	.15	.11	.13	.37
	.00	—	—	—		—
	.30	.20	.10	.07	.09	.25
	.00	—	—	—		—
	.30	.20	.10	.07	.07	.25
	.00	—	—	—		—

wrong addition

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MC 21722 — 6 Canis Majoris — Line centers only — Book 3 p 152

From (mm) against log ap. No. 23

Ap.	line	n	m m	log ap$_m$	log ap$_{m\,m}$	diff	diff (mag)	
1a	3933	50.5	74.5	<0	.90	>.90	>2.25	
2		67	81	<0	.60	>.90	>2.25	2.25
3		-	-	-	.30	-	-	
4		-	-	-	.00	-	-	
1a	3970	45	75	<0	.90	>.90	>2.25	
2		61	81	<0	.60	>.90	>2.25	2.25
3		69	77	<0	.30	>.30	>.75	
4		-	-	-	.00	-	-	
1a	4101	24.8	41.8	.56	.90	.34	.85	
2		39	56	.26	.60	.34	.85	.85
3		54.5	67.5	−.05 *	.30	.35	.87	
4		66	69	-	.00	-	-	
1a	4326	18.5	32.5	.56	.90	.34	.85	
2		30	46	.32	.60	.28	.70	.80
3		47	61.5	−.02 *	.30	.32	.80	
4		60.5	66	-	.00	-	-	
1a	4340	-	(39.5)	-	.90	-	-	
2		29	54	.15	.60	.45	1.12	
3		46 48.5	68 68	<0	.30	>.30	>.75	
4		61	68	-	.00	-	-	
1a	4444	13	27	.58	.90	.32	.80	
2		25.5	42.5	.28	.60	.32	.80	.78
3		41	58	.02	.30	.28	.70	
4		59	66	-	.00	-	-	

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From mtrx against log ap. No. 1 22

ap. line	log ap_n	log $ap_{m\,tn}$

2.25

2.25

.85

235
78

.80

.75

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✓

MC 21722 continued δ Canis Majoris. Line centers only

ap.	line	n	n+n	log ap n	log ap n+n	diff	diff (mag)	means
1a	4215	–	–	–	–	–		
2		36	48	.40	.60	.20	.50	
3		54.5	62.5	.09	.30	.21	.52	.51
4		–	–	–	–	–	–	
1a	4227	–	–	–	.90	–	–	
2		34	50	.36	.60	.24	.60	
3		54	65	-.02	.30	.32	.80	.70
4		64.5	68.5	–	.00	–	–	
1a	4861	17	30	~~.60~~ .65	.90	~~.25~~	.62	
2		32.5	46	.34	.60	.26	.65	.61
3		48	62	.07	.30	.23	.57	
4		66	72	–	.00	–	–	

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MC 21722 δ Canis Majoris. Line wings. n (adopted) = n for

ap.	line	n (adopted)	n + n	log at n	log at n+n	diff	diff (mag.)	Means
1a	3933 1l_1	50.5	71.5					
2	3933 1l_1	67	79					
1a	3933 2l_1	50.5	66.5					
2	2l_1	67	77					
1a	3933 3l_1	50.5	70.5					
2	3l_1	67	74					
1a	3933 1l_2	50.5	73.5					
2		67	84.5					
1a	3933 2l_2	50.5	71					
2		67	79.5					
1a	3933 3l_2	50.5	66					
2		66	77					
		Values for these lines probably depend on differences of total						
1a	4101 1l_1	24.8	30	.90	.79	.11	.27	.21
2	4101 1l_1	39	42	.60	.54	.06	.15	
1a	4101 1l_2	24.8	31	.90	.77	.13	.32	.31
2	4101 1l_2	39	45	.60	.48	.12	.30	
2	4340 1l_1	18?	38	.90	.45	.45	1.12	1.25
3		29	57	.60	.08	.52	1.30	
2	4340 1l_2	18?	36	.90	.48	.42	1.05	1.12
3	4340 1l_2	29	55	.60	.12	.48	1.20	

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center of corresponding line

deviation. See Bk 3 p 153, column 1 (l + m + n)
Plot 23.

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δ Canis Majoris. Line wings continued

ap.	line	n (adopted)	n' + n	log af n	log af mon	diff	diff mag	Mean
1a	4861 $l_{1,a}$	17	24	.90	.77	.13	.32	
1a	$l_{1,b}$	17	23	.90	.79	.11	.27	
2	4861 l_{11}	32.5	37	.60	.51	.09	.22	.28
3	4861 l_1	48	~~36~~ 55	.30	.18	.12	.30	
1a	4861 $l_{2,a}$	17	25	.90	.75	.15	.37	
1a	$l_{2,b}$	17	24	.90	.77	.13	.32	.32 ~~.34~~
2	4861 l_2	32.5	37	.60	.51	.09	.22	
3	4861 l_2	48	~~40~~ 57	.30	.15	.15	.37	

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NC 2721 α Aurigae . Line centers only Bk 3 p 158

ap.	line	n	m+n	log ap_n	log ap_{m+n}	diff	diff (mag)
1b	3933	10	37				1.72 See p. 32
1a		10	36				1.78
2		19	50			.67	1.57
3		32	60				1.67
4		48.5	66				1.72
1b	3970	7	30				1.75 See p. 32
1a		6	28				1.67
2		13 14	49 40				1.45
3		24.5 23.5	56 55				1.85
4		41	64				1.40
1b	4101	2	5.5	.90	.67	.23	.57
1a		2	4.5	.90	.72	.18	.45
2		7	12	.60	.33	.27	.67
3		13	20	.30	.12	.28	.70
4		28.5	38	.00	–	–	
1b	4215	2	4				.50 See p. 32
1a		2	3				.25
2		5	8				.87
3		13	16.5				.40
4		26.5	31.5				.30
1b	4227	2.5	6				.87 See p. 32
1a		2	4.5				.20
2		5	11				.62
3		12.5	19.5				.50
4		25.5	36.5				.65

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log a_{Pn}	log a_{Pmtm}	diff	diff (mtg)	Means
				1.67
				1.62
–				
–				
.60	.82	.22	.55	
.30	.55	.25	.62	.57
.00	.16	.16	.40	
				.36
				.57

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MC 21721 α Aurigae cont. line centers

ap.	line	w	w+w	log α_{ap}	log α_{mean}	diff	diff (mag)
1b	4326	2	4	.90	.60	.30	.75
1a		–	–	~~.60~~	~~.33~~	–	
2		4	8	.60	.33	.27	.67
3		9.5	15.5	.30	.09	.21	.52
4		20	29.5	–	–	–	
1b	4340	2.5	4.5	.90	.52	.38	.95
1a		1	3	1.1	.77	.34	.85
2		3.5	9	.60	.30	.30	.75
3		9.5	17.5	.30	.03	.27	.67
4		19.5	31.5	–	–	–	
1b	4444	2	2.5	.90	.85	.05	.12
1a		1.5	2	.93	.90	.03	.07
2		4	5	~~.60~~	.52	.08	.20
3		8	11	.30	.17	.13	.32
4		~~13~~17	17 21	–	–	–	
1b	4861	3	4.5	.90	.79	.11	.27
1a		–	–	–	–	–	
2		4.5	7.5	.60	~~.47~~	.03.13	.32
3		13	17.5	.30	.11	.19	.47
4		21.5	29.5	.00	–	–	

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log a_m	log a_{m+n}	diff	diff (mag)	Means
.90	.60	.30	.75	.62
.53	.30	.23	.57	.59
.18	.00	.18	.45	
—	—	—		
—	—	—		
.86	.60	.26	.65	.74
.58	.30	.28	.70	.76
.25	.00	.25	.62	
—	—	—		
—	—	—		
.70	.60	.10	.25	.21 .20
.43	.30	.13	.32	
.09	.00	.09	.22	
—	—	—		
.90	.60	.30	.75	
.43	.30	.13	.32	.43
.19	.00	.19	.47	

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MC 21721 α Aurigae. Line wings. n adopted = n for line center

Ap.	Line	n (adopted)	m+n	log at n	log at m+n	diff	dif (mΔλ)	Mean
1b	3933 l_1	10	30	—	.90	—		
1a		—	—	—	—	—		
2		19	41	—	.60	—		
3		32	59	.85	.30	.55	1.37	
4		48.5	64	.47	.00	.47	1.17	1.27
1b	3933 l_1	10	20	—	.90	—	—	
1a		—	—	—	—	—	—	
2		19	31	.92	.60	.32	.80	
3		32	49	.58	.30	.28	.70	.76
4		48.5	59	.31	.00	.31	.77	
1b	3933 l_2	10	30	—	.90	—	—	
1a		—	—	—	—	—	—	
2		19	45	—	—	—	—	
3		32	55	.85	.30	.55	1.37	1.37
4		48.5	64.5	.47	.00	.47	1.17	
1b	3933 l_2	10	20	—	.90	—	—	
1a		—	—	—	—	—	—	
2		19	32	.92	.60	.32	.80	
3		32	46	.60	.30	.30	.75	
4		48.5	60	.34	.00	.34	.85	

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Ap - Line	n(adopted)	m + n	log a_{p_n}	log $a_{p_{n+m}}$	diff	diff (mag)
1b 3970 1l	7	22	—	.90	—	—
1a	~~13.5~~	—	—	—	—	—
2	13.5	30	—	.60	—	—
3	24	47	.82	.30	.52	1.30 (.45)
4	41	59	.39	.00	.39	.91
1b 3970 2l	7	16	—	.90	—	—
1a	—	—	—	—	—	—
2	13.5	22	—	—	—	—
3	24	38	.55	.30	.25	.62 (.25)
4	41	53	.25	.00	.25	.62
1b 3970 1l	7	20	—	.90		
1a	—	—	—	—		
2	13.5	31	—	.60		
3	24	49	.79	.30	.49	1.22 (.45)
4	41	60	.43	.00	.43	1.07
1b 3970 2l	7	14	—	.90		
1a	—	—	—	—		
2	13.5	20	.91	.60	(31*)	
3	24	36	.52	.30	.22	.55 (21)
4	41	53	.21	.00	.21	.52

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MC 20790 — Line cores & wings — See plot 29

α Lyrae *

Book 3 p. 132, 166

Ap	Line	n	m+n	log ap$_{w}$	log ap$_{m+n}$	diff	diff (avg)	Means
1	Hβ	13	38	1.2	~~.78~~	.34	0.85	
2	Hβ	29	58	.90	.52 *	.38	0.95	.95
3	Hβ	51	72	1.01	.60	.41	1.02	.95
		52	72	1.00	.60	.40	1.00	
5	Hβ							
1	Hβ 1l_1	14	23	1.20	1.01	0.19	0.47	
2	1l_1	30	45	.90	.70	0.20	0.50	.50
3		52	65	.80	.60	0.20	0.50	.49
5								
1	Hβ 2l_1	15	19	1.2	1.1	0.10	0.25	
2		31	37	.90	.82	.08	0.20	.23
		~~15~~ 53	~~19~~ 60	.70	.60	.10	0.25	.23
3		~~31~~	~~37~~					
5								
1	Hβ 3l_1	15	16	1.2	1.15	.05	0.12	
2		32	34	.90	.87	.03	0.07	.11
3		54	58	.96	.90	.06	0.15	.11
5								
1	Hβ 4l_1							
2								
3		55	57					
5								

Linear portions of characteristic curve run up to 20.
All points derived from this region thus checked

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Ap.	line	n	m+n	log ap$_n$	log ap$_{m+n}$	diff.	diff (mag)	Mean
1	Hβ l_2	13	28	1.2	0.90	0.30	.75	
2		28	48	.62	.90	.28	.70 ✓	
		50	67	1.2	.90	.30	.75	.73,
3		51	68	.88	.60	.28	.70	.73
5								
1	Hβ2 l_2	12	18	1.20	1.08	.12	.30	
2		27	37	.90	.74	.16	.40 ✓	
		49	59	1.05	.90	.15	.37	.38,
3		50	60	.73	.60	.13	.32 ✓	.35
5								
1		12	14	1.20	1.15	.05	.12	
2	Hβ 3 l_2	26	31	.90	.82	.08	.20	
		48	54	.98	.90	.08	.20 ✓	.19, .17
3		49	54	.67	.60	.07	.17 ✓	
5								
1	Hβ 4 l_2	12	13	1.20	1.18	.02	.05	
2		25	27	.90	.87	.03	.07 ✓	
		47	51	.94	.90	.04	.10	.07, .07
3		48	51	.62	.60	.02	.05 ✓	
5								
1	Hγ	7	32	1.2	.65	.55	1.37	
2		20	55	.90	.25	.65	1.62 ✓	1.62,
3		35	72	.60	0.05	.55	1.37	1.43
				1.16	.60	.56	1.40	
5		73	77	.56	.00	.56	1.40	
1	Hγ l_1	7	20	1.2	.90	.30	0.75	
2		20	36	.90	.58	.32	0.80 ✓	.86,
3		35	58	.60	.19	.41 ←	1.02 ✓ from flow part of	.83
				~~1.16~~ 0.91	~~.66~~ .31	~~.50~~ .31	0.75 curve	
5		73	77	✗ .56	> .00	< .56	< 1.40	

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α Lyrae continued

ap.	line	n	m+n	log a_{m+n}	log a_{m+n}	diff	diff (mag.)	
1	Hγ2l$_1$	7	12	1.20	1.08	0.12	0.30	
2		20	28	.90	0.72	0.18	0.45 ✓	(.45)
3		35	48	(.60 ~~+.16~~ 0.79	.36 ~~-.99~~ 0.60	(.24) 0.19	(0.60) ✓ 0.47	.52 (.64)
5		73	77	.56	~~X~~.00	<.56	<1.40	
1	Hγ3l$_1$	7	9	1.20	1.15	0.05	0.12	
2		20	24	.90	.81	0.09	0.22 ✓	(.22)
3		35	42	(~~.60~~	.47	(0.13)	0.32 ✓	.27
5		73	77	~~+.16~~ 0.71	~~+.06~~ 0.60	0.11 ~~0.10~~	0.27	
				.56	>.00	<.56	<1.40	
1	Hγ4l$_1$	7	8	1.20	1.18	0.02	0.05	
2		19	20	0.90	0.89	0.01	0.02 ✓	
3		35	39	0.60	0.53	0.07	0.17 ✓	.12
				0.67	0.60	0.07	0.17	(.11)
5		73	76	0.05	0.00	0.05	0.12	
1	Hγ1l$_2$	7	20	1.20	0.90	(.30)		
2		20	41	.90	.50	.40	1.0	
				1.20	0.90	.30	.75 ✓	
3		35	61	.60	.21	.39	.97 ✓	.92
				.98	.60	.38	.95	
5		73	77	.30	<.00	7.30		
1	Hγ2l$_2$	7	13	~~1.20~~ ~~+.07~~	~~1.07~~ ~~0.90~~	.17	32	
2		20	31	0.90	0.68	.22	.55 ✓	.57
				1.06	0.90	.16	.40	.55
3		35	52	0.60	0.34	.26	.65 ✓	
				0.85	0.60	.25	.62	
5		73	77	.30	<.00			
1	Hγ3l$_2$	7	10	1.20	~~1.13~~ ~~0.90~~	.07	.17	
2		20	24	.90	.82	.08	.20 ✓	.25
				.98	.90	.08	.20	.29
3		35	45	.6	.44	1.6	.40 ✓	
				.75	.6	1.5	.37	
5		73	75	.06	0	.06	.15	

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Ap.	Line	n	m+n	log ap$_n$	log ap$_{m+n}$	diff			
1	Hγ 4 l_2	7	9	1.20	1.15	0.05		.12	
2		20	22	.90	.86	.04	✓	.10	
				.94	.90	.04		.10	
3		35	41	.60	.50	.10	✓	.25	.17
				.69	.60	.09		.22	.14
5		73	74	.03	.00	.03		.07	
1	Hδ	11	40	1.2	.56	.64		1.60	
2		24	62	0.90	.17	.73	✓	1.82	1.82
3		38	72	0.6	.02	.58		1.45	1.60
				1.22	.60	.62		1.55	
5		75	80	>.48	0.0	>.48		> 1.20	
1	Hδ l_1	10	24	1.20	.90	.30		0.75	
2		24	46	.90	.46	.44	✓	1.10	
				.90	.60	.30		0.75	.92
3		38	62	.60	.18	.42		1.05	.92
5		75	80	.00	1.01	.39		0.97	
1	Hδ 2 l_1	10	18	1.2	1.02	.18		0.45	
2		24	35	.90	.65	.25	✓	0.62	.60
3		38	54	.60	.31	.29	✓	0.72	.67
5		75	79	.00	-	-			
1	Hδ 3 l_1	10	14	1.2	1.11	.09		0.22	
2		25	30	.90	.76	.14	✓	0.35	.32
3		38	47	.60	.44	.16	✓	0.40	.37
5		75	78	.00	-	-			
1	Hδ 4 l_1	10	12	1.2	1.16	.04		0.16	.13
2		25	27	.90	.83	.07	✓	0.17	.19
3		38	43	.60	.51	.09	✓	0.22	
5		75	77	.00	−.02	.02		0.05	

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α Lyrae continued

ap.	line	n	n+n	log ap n	log ap n+n	diff		diff (mag)	Means
1	H61l_2	11	29	1.2	.80	.40		1.0	
2		24	50	—	—	—			1.14
3		38	67	1.09	.60	.49		1.22	
5		75	80	—	—	—			
1	H62l_2	11	20	1.20	.98	.22		.55	
2		24	39	.90	.58	.32	✓	.80	.80, .72
3		38	58	.92	.60	.32	✓	.80	
5		75	79	—	—	—			
1	H63l_2	11	16	1.20 ~~1.07~~	1.07	.13		.32	
2		25	33	.86	.70	.16	✓	.40	.36, .33
3		38	50	1.03	.90	.13	✓	.32	
5		75	77	.82	.60	.12		.30	
1	H64l_2	11	13	1.20	1.14	.06		.15	
2		25	29	.86	.78	.08	✓	.20	.22, .21
3		38	46	.97	.90	.07	✓	.17	
5		75	77	.72 —	.60 —	.12 —		.30	
1	H65l_2	11	12	1.20	1.17	.03		.07	
2		25	27	.86	.82	.04	✓	.10	.15, .13
3		38	43	.94 .70	.90 .60	.04 .10	✓	.10 .25	
5									
1	H65	16	53	1.20	.56	.64	?	1.60	1.60,
2		34	71	.90	.20	.70	*	1.75	1.66
3		51	77	.60	✗ < .00	> .60			
5		78	81	—	—				

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Ap.	line	n	n+n	log $a_n r_{n+n}$	log $a_{n+n} r_{n+n}$	diff		diff (mag)	Means
1	He I l_1	15	39	1.20	.79	.41		1.02	
2		33	60	.90	.43	.47	✓	1.17	1.17,
3		50	72	.60	.18	.42		1.05	1.08
5		78	81	1.06 —	.60 —	.44		1.10	
1	He II l_1	14	26	1.20	1.01	.19		.47	
2		33	51	.90	.58	.32	✓	.80	.80,
3		50	69	.60	.25	.35		.87	.73
5		78	81	.91 —	.60 —	.31		.77	
1	He III l_1	14	22	1.20	1.06	.14		.35	
2		32	42	.90	.72	.18	✓	45	
3		49	61	1.06 .60	.90 .39	.16 .21	✓	.40 .52	.48, .45
5		78	80	.80 —	.60 —	.20		.55	
1	He IV l_1	14	18	1.20	1.13	.07		.17	
2		32	37	.90	.81	.09	✓	.22	.21
3		49	56	.96 .60	.90 .48	.06 .12	✓	.15 .30	.23, ~~.14~~
5		78	80	.71 —	.60 —	.11		.27	
1	He V l_1								
2		31	34	.90	.86	.04	✓	.10	
3		48	52	.64	.56	.05	✓	.12	.11, —
5									
1	He I l_2	16	42	1.20	.77	.43			1.17
2		34	65 ~~48~~	=	=		✓		~~.47~~
3		51	73	—	—	.51			
5		78	81	1.11 —	.60 —				

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1924phae.proj.1097P

70 ✓

α Lyrae continued

ap	line	n	m+n	log ap n	log ap m+n	diff	diff (mags)	Means
1	He 2 l_2	16	30	1.20	.97	.23	.57	
2		35	55 ~~59~~	1.15	.90	.25	✓.62	.62, .70
3		51	69	.96	.60	.36	.90	
5		78	80					
1	He 3 l_2	17	26	1.20	1.06	.14	.35	
2		36	49 ~~71~~ ?	.90	.66	.24	✓.60	.56 .65, ~~.75~~
3		52	63 ?	1.08	.90	.28	✓.70	
5		78	79	.86	.60	.24	.60	
1	He 4 l_2	17	22	1.20	1.13	.07	.17	
2		37	44 ~~75~~	.90	.78	.12	✓.30	
3		53	61	1.80	.90	.10	✓.25	.32, .28
5				.76	.60	.16	✓.40	
1	He 5 l_2	18	20	1.20	1.16	.04	?✓.10	
2		37	40 ~~76~~	.90	.86	.04	✓.10	.13, —
3		54	58	.95	.90	.05	✓.12	
5				.68	.60	.08	✓.20	
1	He 6 l_2							
2								
3		55	58	—	—	—	✓	
5								
1	K	20	25	1.20	1.11	.09	✓	.22
2		39	45	.90	.82	.083	✓	.20 .23, —
3		57	62	.98	.90	.083		.20
5				.72	.60	.12	✓	.30

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ap	line	n	m+n	log ap n	log ap m+n	diff	diff (mag)	Means
1	K1l1	0	0	?	?			
2		39	40	.90	.88	.02	✓ (.05)	.05,
3		57	58	.60	.58	.02	✓ (.05)	
5								
1	K1l2	20	23	1.20	1.15	.05	✓ (.12)	
2		40	42	.90 .93	.87 .90	.03 .03	✓ (.07) .07	.11, —
3		58	62	.60 .66	.54 .60	.06 .06	✓ (.15) .15	
5								
1	Hγ	33	68	1.20	.63	.57	? 1.42	1.42
2		53	78	—	—	—		
3		69	79	—	—	—		
5								
1	Hγ1l1	32	60	1.20	.77	.43	✓ (1.07)	1.07
2		51	74	—	—	—		1.03
3		68	77	1.06	.60	.40	1.00	
5								
1	Hγ2l1	31	51	1.20	.89	.31	✓ (.77)	.77, .76
2		50	68	.90	.60	.30	.75	
3		68	76	1.21 .90	.90 .60	.31 .30	.77 .75	
5								
1	Hγ3l1	30	43	1.20	1.00	.20	✓ (.50)	.50, .55
2		49	64	.90	.66	.24	.60	
3		67	74	1.13 .82	.90 .60	.23 .22	.57 .55	
5								

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1924phae.proj.1097P

72 J

α Lyrae continued

ap.	line	n	m+m	log ap$_n$	log ap$_{m+m}$	diff		diff (mag)	Means
1	$H_\gamma 1_2$	34	62	1.20	.76	.44	✓	1.10	1.10 —
2		54	75	—	—				
3		69	78	—	—				
5									
1	$H_\gamma 2_2$	35	55	1.20	.90	.30	✓	(.75)	.75,
2		55	70	.90	.58	.32		.80	.78
3		69	76	1.20 .92	.90 .60	.30 .32		.75 .80	
5									
1	$H_\gamma 3_2$	36	48	1.20	1.03	.17	✓	(.42)	.42, .43
2		56	65	.90	.73	.17		.42	
3		70	75	1.07 .78	.90 .63	.17 .18		.42 .45	
5									
1	H_η	56	75			?7.3		>.75	>.75
2		69	77			?7.3		>.75	
3									
5									
1	$H_\eta 1_1$	55	75			?7.3		>.75	>.75
2		70	78			?>.3		>.75	
3									
5									
1	$H_\eta 2_1$	54	72			?>.3		>.75	>.75
2		69	77			?>.3		>.75	
3									
5									

faint

too

apertures measurable

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Ap	line	m	m+n	$\log ap_m$	$\log ap_{m+n}$	diff	diff (mag)	Means
1	$Hy\,3l_1$	52	66	1.20	.95	.25	.62	.62
2		68	73	–	–			
3								
5								
1	$Hy\,1l_2$	57	71	1.20	.90	.30	~75	.75
2		71	79	–	–			
3								
5								
1	$Hy\,2l_2$	58	69	1.20	.95	.25	.62	.25
2		72	79	–	–			
3								
5								
1	$Hy\,3l_2$	59	67	1.20	1.04	.16	.40	.16
2		73	78	–	–			
3								
5								

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MC 21640 α Cygni * Book 3, p. 102, 144. Plot of n

ap.	line	n	m+n	log ap n	log ap m+n	diff	stellar mag m.
1b	Hβ	16	32	.88	.74	.14	.35
1a		1	3	.90	.75	.15	.37
2		6	9	.60	.48	.12	.30
3		14.5	18.5	.30	.17	.13 ✓	.32
4		24	27	–	–	–	
1b	Hβ1l$_1$	–	–	–	–	–	
1a		2	3	.90	.81	.09	.22
2		5.5	7	.60	.54	.06	.15
3		14.5	16.5	.30	.23	.07 ✓	.17
4		24.5	26	–	–	–	
1b	Hβ1l$_2$	–	–	–	–	–	
1a		2.5	2.5	.90	.90	.00	.00
2		6	7	.60	.59	.01	.02
3		14.5	15.5	.30	.27	.03 ✓	.07
4		24.5	25	–	–	–	

The flat part of the characteristic curve runs from 10 to 25. All values from this range thus checked, and corresponding stellar mags entered in red ink.

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Plot of m vs m

log ap n	log ap m vs m	diff	stellar mag	Mean
—	—	—		
—	—	—		
.72	.60	.12	.30	
.43	.30	.13 ✓	.32	.32, .33
.14	.00	.14	.35	
—	—	—		
—	—	—		
.68	.60	.08	.20	
.36	.30	.06 ✓	.15	.16, .18
.07	.00	.07 ✓	.17	
.90	.90	.00	.00	
.64	.60	.04	.10	
.33	.30	.03 ✓	.07	.07, .07
.03	.00	.03 ✓	.07	

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1924phae.proj.1097P

α Cygni, continued.

ap.	line	n	m+n	log af$_n$	log af$_{m+n}$	diff	mag.
1b	Hγ	20	40	.79	.54	.25	.62
1a		1.5	2.8	.90	.64	.26	.65
2		3	6	.60	.41	.19	.47
3		{8.5 17	{15 24	.30	.03	.27	.67
4		16.5	24.5	=	=	=	
1b	Hγ l_1	–	–	–	–	–	no meas.
1a		(30)	(30)	–	–	–	no meas.
2		3.5	5	.60	.57	.09	.22
3		9 17.5	11 19.5	.30	.22	.08	.20
4		17	19	=	=	=	
1b	Hγ l_2	–	–	–	–	–	no meas.
1a		(30)	(30)	–	–	–	no meas.
2		3.5	4	.60	.55	.05	.12
3		8.5 17.5	9.5 18.5	.30	.25	.05	.12
4		17	18	=	=	=	

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log a_{1n}	log a_{1m+n}	diff	mag.	Means
—	—	—		
—	—	—		
.92	.60	.32	.80	
.49	.30	.19	.47	.67, .63
.26	.00	.26 ✓	.65	
.27	-.01	.28 ✓	.70	
—	—	—		
—	—	—		
—	—	—		
.30	.30	.09 ✓	.22	.21, .21
.08	.00	.08 ✓	.20	
—	—	—		
—	—	—		
—	—	—		
.35	.30	.05	.12	
.05	.10	.04 ✓	.10	.10, .11
.04	.00	.04 ✓	.10	

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α Cygni (cont.)

ap.	line	w	w + tw				
1b	Hδ	1.6	4.0				
1a		2	4	.90	.58	.32	.80
2		3.5	7.5	.60	.36	.24	.60
3		9	15	.30	.11	.19 ✓	.47
4		19	25.5	—	—	—	
1b	$H\delta l_1$	—	—	—	—	—	
1a		2	3	.90	.70	.20	.50
2		3.5	5.5	.60	.46	.14	.35
3		9	12	.30	.18	.12 ✓	.30
4		19.5	22.5	—	—	—	
1b	$H\delta l_2$	—	—	—	—	—	
1a		2	3	.90	.70	.10	.25
2		3.5	4.5	.60	.53	.07	.17
3		9	10	.30	.26	.04 ✓	.10
4		18.5	20.5	—	—	—	

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–	–	–		
.92	.66	.26	.65	
.56	.30	.26 ✓	.65	.56, .63
.16	.00	>.16 ✓	>.40	
–	–	–		
–	–	–		
.75	.60	.15	.37	
.43	.30	.13 ✓	.32	.31, .37
–	–	–		
–	–	–		
–	–	–		
.68	.60	.08	.20	
.35	.30	.05 ✓	.12	.11, .16
.04	.00	.04 ✓	.10	

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α Cygni (cont.

Ap.	line	n	m+n	log a_n	log a_{m+n}		
1b	H_2	26	6	.92	.58	.34	.85
1a		3.5	7.5	.80	.50	.30	.75
2		5.5	12.5	.60	.34	.26	.65
3		13.5	22.5	.30	.04	.26 ✓	.65
4		24	30	–	–	–	
1b	H_2	–	–				
1a		2.5	7	.90	.53	.37	.92
2		5.5	12	.60	.35	.25	.62
3		13.5	22.5	.30	.04	.26 ✓	.65
4		–	–	–	–	–	
1b	$H_2 l_1$	–	–				
1a		3.5	5.5	.90	.62	.28	.70
2		6	10.5	.60	.43	.17	.42
3		14.5	18.5	.30	.19	.11 ✓	.27
4		25	28	–	–	–	
1b	$H_2 l_1$	–	–	–	–	–	
1a		3	5	.90	.66	.24	.60
2		6	10	.60	.42	.18	.45
3		14	19	.30	.13	.17 ✓	.42
4		–	–	–	–	–	
1b	$H_2 l_2$	–	–	–	–	–	
1a		3.5	4.5	.80	.72	.08	.20
		3	4	.90	.78	.12	.30
2		6	8.5	.60	.48	.12	.30
		6	8	.60	.50	.10	.25
3		14	16.5	.30	.22	.08 ✓	.20
		14	17	.30	.20	.10 ✓	.25
4		24	26.5	–	–		

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log a$_{Fe}$	log a$_{mon}$			
—	—	—		
—	—	—		
—	—	—		
.57	.30	.27	✓	.67
.26	.00	.26		.65
				.66, .70
—	—	—		
—	—	—		
—	—	—		
.57	.30	.27	✓	.67
↓	↓	↓		
—	—	—		
—	—			
.85	.60	.25		.62
.43	.30	.13	✓	.32
.12	.00	.12		.30
				.34
—	—	—		
.80	.60	.20		.50
.48	.30	.18	✓	.45
—	—	—		
—	—			
—	—			
.71	.58	.13		.32
.71	.60	.11		.27
.40	.32	.08	✓	.20
.40	.30	.10	✓	.25
.08	.00	.08	✓	.20

.30, .44

.42, .48

.22, .25

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α Cygni (cont.)

ap.	line	w	m + w				mag
1b	K	–	–	–	–	–	
1a		4	6.5	.90	.72	.18	.45
2		8 / 8.5	11 / 11.5	60 / .58	.48 / .46	.12 / .12	.30 / .30
3		16	21	.30	.17	.13 ✓	.32
4		27	29.5	–	–	–	
1b	$K1_1$	–	–	–	–		
1a		6	8	.90	.72	.18	.45
2		8.5 / 9	10.5 / 11	.60 / .58	.52 / .50	.08 / .08	.20 / .20
3		17	19	.30	.25	.05 ✓	.12
4		27.5	28.5	–	–	–	
1b	$K1_2$	–	–	–	–	–	
1a		4	5	.90	.78	.12	.30
2		8.5 / 8.5	9 / 9.5	.60 / .60	.56 / .57	.04 / .03	.10 / .07
3		16.5	17	.30	.28	.02 ✓	.05
4		27	27.5	.02	.00	.02	.05
1b	Hζ	–	–	–	–		
1a		8	13	.90	.63	.27	.67
2		14	19.5	.60	.38 ✓	.22 ✓	.55
3		22	27	.30	.11	.19 ✓	.47
4		29	31.5	–	–		

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				mag	mean
–	–	–			
–	–	–			
.78	.60	.18		.45	
.76	.58	.18		.45	
.45	.30	.15	✓	.37	.35, .37
.11	.00	.11		.27	
–	–	–			
–	–	–			
.80	.60	.20		.50	
.72	.59	.13		.32	
.38	.30	.08	✓	.20	.16, .26
.05	.00	.05		.12	
–	–	–			
.64	.60	.04		.10	
.64	.59	.05		.12	
.33	.30	.03		.07	
.03	.00	.03	✓	.07	.06, .10
–	–				
–	–				
.82	.60	.22	✓	.55	.52, .54
.18	.00	.18		.45	

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β Orionis MC 21787 . Book 3 p. 176 Straight 20-55

Ap.	Line	n	n+n			Diff	Mag.
1b	Hβ	13	15	.90	.81	.09	.22
1a		–	–	–	–		
2		21	25	.60	.50	✓ .10	.25
3		36	42	.30	.20	✓ .10	.25 .25
4		60	67	–	–		
1b	4481	6	7	.90	.80	.10	.25
1a		–	–	–	–		
2		10	13	.60	.50	✓ .10	.25
3		21	26	.30	.21	✓ .09	.22 .22
4		42	45	–	–		
1b	4471	6	7	.90	.80	.10	.25
1a		–	–				
2		11	13	.60	.50	.10	.25
3		22	25	.30	.23	✓ .07	.17 .17
4		42	45	–	–	✓	
1b	Hγ	6	12	.90	.64	.26	.65
1a		–	–	–	–		
2		13	19	.60	.44	.16	.40 .40
3		25	33	.30	.14	✓ .16	.40
4		45	54	–	–	✓	
1b	Hδ	7	13	.90	.68	.22	.55
1a		–	–	–	–		
2		15	22	.60	.44	.16	.40
3		29	39	.30	.14	✓ .16	.40 .40
4		57	61	–	–		

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1924phae.proj.1097P

				Means
—	—			
—	—			
↓ .70	↓ .60	✓ .10	.25	.25, .22
↓ .40	↓ .30	✓ .10	.25	
↓ .05	↓ .00	.05	.12	
—	—			
—	—			
.72	.60	✓ .12	.30	
.39	.30	✓ .09	.22	.22, .22
.04	.00	✓ .04	.10	
—	—			
—	—			
.72	.60	.12	.30	
.39	.30	✓ .09	.22	.16, .21
.04	.00	✓ .04	.10	
—	—			
—	—			
.84	.60	.24	.60	
.46	.30	✓ .16	.40	.36, .45
.11	.00	✓ .11	.27	
—	—			
—	—			
.82	.60	.22	.55	
.46	.30	✓ .16	.40	.40, .43
.12	.00	.12	.30	

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1924phae.proj.1097P

✓

β Orionis, continued

Ap.	Line	n	m+n				
1b	4026	8	10	.90	.83	.07	.17
1a		—	—	—	—	—	—
2		16	19	.60	.54	.06	.15
3		32	35	.30	.25	.05	✓ .12
4		54	58	—	—	—	—
1b	Hε	12	19	.90	.68	.22	.55
1a		—	—	—	—	—	—
2		22	31	.60	.40	.20	✓ .50
3		37	50	.30	.12	.18	✓ .45
4		62	73	.00	—	—	—
1b	K	15	17	.90	.84	.06	.15
1a		—	—	—	—	—	
2		26	29	.60	.52	.08	✓ .20
3		43	47	.30	.22	.08	✓ .20
4		67	72	—	—	—	—
1b	Hζ	24	32	.90	.68	.22	✓ .55
1a		—	—	—	—	—	
2		35	44	.60	.38	.22	✓ .55
3		55	66	.30	.16	.14	.35
4		78	84	—	—	—	—

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1924phae.proj:1097P

Means

—	—			
—	—			
.69	.60	.09	.22	
.35	.30	.05	✓ .12	.12, .13 (.14)
.03	.00	.03	.07	
—				
—				
.81	.60	.21	✓ .52	.45
.46	.30	.16	✓ .40	.46, .46
.11	.00	.11	.27	
—	—	—		
—	—	—		
.67	.60	.07	✓ .17	.18, .17
.36	.30	.06	✓ .15	
.06	.00	.06	.15	
—	—	—		
—	—	—		
.81	.60	.21	✓ .52	.54, .43
.44	.30	.14	.35	
.10	.00	.10	.25	

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Sirius MC 21802 see Vk 3 p 194

ap.	line	n	n' + n			Diff.		diff (mag)
1a	Hβ	13	28	0.90	.42	.48	✓	1.20
2		20	40	0.60	.22	.38	✓	.95
3		35	63	–	–		✓	
4		57	81	–	–			
1a	Hβl_1	12	20	.90	.58	.32		.80
2		19	30	.60	.38	.22	✓	.55
3		35	54	.30	.03	.27	✓	.67
4		56	74	–	–			
1a	Hβ$2l_1$	12	15	.90	.73	.17		.42
2		19	24	.60	.49	.11	✓	.27
3		34	42	.31	.20	.11	✓	.27
4		55	64	–	–			
1a	Hβ$3l_1$	12	13	.90	.81	.09		.22
2		18	20	.60	.55	.05	✓	.12
3		33	36	.30	.26	.04	✓	.10
4		54	57	.00	−.04	.04	✓	.10
1a	Hβl_2	13	20	.90	.63	.27		.67
2		21	31	.60	.39	.21	✓	.52
3		36	51	.30	.09	.21	✓	.52
4		58	75	.00	–	–		
1a	Hβ$2l_2$	14	18	.90	.68	.22		.55
2		21	25	.60	.51	.09	✓	.22
3		37	44	.30	.20	.10	✓	.25
4		59	67	.00	–	–		

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—	—	—		
—	—	—		
.70	.30	.40	✓	1.0
.37	.00	.37	✓	.92
—	—	—		
.92	.60	.32	✓	.80
.52	.30	.22	✓	.55
.27	.00	.27	✓	.67
—	—	—		
.73	.60	.13	✓	.32
.41	.30	.11	✓	.27
.13	.00	.13	✓	.32
÷	—			
.66	.60	.06	✓	.15
.35	.30	.05	✓	.12
.04	.00	.04	✓	.10
—	—			
.86	.60	.26	✓	.65
.50	.30	.20	✓	.50
.21	.00	.21		.52
—	—			
.72	.60	.12	✓	.30
.38	.30	.08	✓	.20
.10	.00	.10	✓	.25

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Sirius cont.

ap.	line	n	m+n				
1a	$H\beta 3l_2$	14	15	.90	.84	.06	.15
2		22	24	.60	.56	.04 ✓	.10
3		38	41	.30	.26	.04 ✓	.10
4		60	64	.00	–	–	
1a	4481	6	7	.90	.80	.10	.25
2		10	12	.60	.52	.08 ✓	.20
3		20	23	.30	.22	.08 ✓	.20
4		37	40	.00	–	–	
1a	Hζ	7	24	.90	.32	.58	1.45
2		14	37	.60	.08	.52	1.30
3		25	57	–	–	–	
4		42	79	–	–	–	
1a	$H\gamma 1l_1$	7	15	.90	.57	.33	.82
2		14	27	.60	.25	.35	.87
3		25	43	.30	−.01	.31 ✓	.77
4		42	67	.00	–	–	
1a	$H\gamma 2l_1$	7	10	.90	.74	.16	.40
2		14	20	.60	.43	.17	.42
3		25	34	.30	.11	.19 ✓	.47
4		42	57	.00	–	–	
1a	$H\gamma 3l_1$	7	9	.90	.78	.12	.30
2		14	17	.60	.51	.09	.22
3		25	30	.30	.18	.12 ✓	.30
4		43	52	.00	–	–	

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–	–	–		
.65	.60	.05	✓	.12
.34	.30	.04	✓	.10
.05	.00	.05	✓	.12
–	–	–		
.68	.60	.08	✓	.20
.38	.30	.08	✓	.20
.05	.00	.05	✓	.12
–	–	–		
–	–	–		
.88	.30	.58	✓	1.45
.53	.00	.53	✓	1.32
–	–	–		
.92	.60	.32		.80
.64	.30	.34	✓	.85
.34	.00	.34	✓	.85
–	–	–		
.74	.60	.14		.35
.49	.30	.19	✓	.47
.18	.00	.18	✓	.45
.71	.60	.11		.27
.41	.20	.11	✓	.27
.11	.00	.11	✓	.27

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Sirius, cont.

ap	line	w	m to w				
1a	$H\gamma l_2$	7	16	.90	.54	.36	.90
2		14	25	.60	.30	.30	.75
3		25	44	.30	−.02	.32	✓ .80
4		42	65	−	−	−	
1a	$H\gamma 2_2$	7	11	.90	.70	.20	.50
2		14	20	.60	.43	.17	.42
3		25	34	.30	.11	.19	✓ .47
4		42	56	−	−	−	
1a	$H\gamma 3_2$	7	9	.90	.78	.12	.30
2		14	17	.60	.51	.09	.22
3		25	31	.30	.16	.14	✓ .35
4		42	50	−	−	−	
1a	$H\delta$	9	30	.90	.27	.63	1.57
2		15	42	.60	.07	.53	1.32
3		28	63	−	−	−	
4		47	83	−	−	−	
1a	$H\delta l_1$	9	23	.90	.40	.50	1.25
2		15	33	.60	.22	.38	.95
3		28	52	−	−	−	
4		47	76	−	−	−	
1a	$H\delta 2_1$	9	17	.90	.54	.36	.90
2		15	24	.60	.38	.22	.55
3		28	41	.30	.09	.21	✓ .52
4		47	66	−		−	

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–	–	–		
–	–	–		
.60	.30	.30	✓	.75
.33	.00	.33	✓	.82
–	–	–		
.77	.60	.17		.42
.47	.30	.17	✓	.42
.19	.00	.19	✓	.47
–	–	–		
.69	.60	.09		.22
.41	.30	.11	✓	.27
.13	.10	.13	✓	.32
–	–	–		
–	–	–		
.95	.80	.65	✓	1.62
.52	.00	.52	✓	1.30
–	–	–		
–	–	–		
.71	.30	.41	✓	1.02
.37	.00	.37	✓	.92
–	–	–		
–	–	–		
.51	.30	.21	✓	.52
.22	.00	.22	✓	.55

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Sirius, cont.

ap	line	w	mtw				
1a	Hδ2l$_1$	9	13	.90	.67	.23	.57
2		15	21	.60	.44	.16	.40
3		28	35	.30	.19	.11	✓ .27
4		47	58	–	–	–	
1a	Hδ4l$_1$	9	11	.90	.76	.14	.35
2		15	18	.60	.51	.09	.22
3		28	32	.30	.23	.07	✓ .17
4		47	54	–	–		
1a	Hδ5l$_1$	9	10	.90	.81	.09	.22
2		16	18?	.56	.51	~~.09~~ .05	.12
3		28	29	.30	.28	.02	✓ .05
4		47	51	–	–	–	
1a	Hδ1l$_2$	9	21	.90	.44	.46	1.15
2		15	30	.60	.27	.33	.82
3		28	51	.30	–	–	
4		47	72	.06	–	–	
1a	Hδ2l$_2$	9	15	.90	.60	.30	.75
2		15	24	.60	.38	.22	.55
3		28	41	.30	.09	.21	✓ .52
4		47	63	–	–		
1a	Hδ3l$_2$	9	13	.90	.67	.23	.57
2		15	20	.60	.46	.14	.35
3		28	36	.30	.17	.13	✓ .32
4		47	57	–	–		

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–	–	–		
.79	.60	.19		.47
.43	.30	.13	✓	.32
.21	.00	.21	✓	.52
–	–	–		
.70	.60	.10		.25
.38	.30	.08	✓	.20
.09	.00	.09	✓	.22
–	–	–		
.65	.60	.05		.12
.32	.30	.02	✓	.05
.06	.00	.06	✓	.15
–	–	–		
–	–	–		
.71	.30	.41	✓	1.02
.37	.00	.37	✓	.92
–	–	–		
.90	.60	.30		.75
.51	.30	.21	✓	.52
.21	.00	.21	✓	.52
–	–	–		
.77	.60	.17		.42
.43	.30	.13	✓	.32
.21	.00	.21	✓	.52

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Sirius, cont.

Ap.	line	n	m+n				
1a	H84l$_2$	9	11	.90	.76	.14	.35
2		15	17	.60	.54	.06	.15
3		28	32	.30	.24	.06	✓ .15
4		47	53	—	—		
1a	H85l$_2$	9	10	.90	.81	.09	.22
2		16	17	.54	.54	.02	.05
3		28	30	.30	.33	.03	✓ .07
4		47	51	—	—	—	
1a	H5						
2							
3							
4							
1a	H81l$_1$						
2							
3							
4							
1a	H82l$_1$						
2							
3							
4							
1a	H83l$_1$						
2							
3							
4							

Dup.

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–	–	–		
.67	.60	.07		.17
.36	.30	.06	✓	.15
.09	.00	.09	✓	.22
–	–	–		
.64	.60	.04		.10
.34	.30	.04	✓	.10
.06	.00	.06	✓	.15

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Sirius, cont.

Ap.	line	n	m+n
1a	Hδ4L$_1$		
2			
3			
4			
1a	Hδ5L$_1$		
2			
3			
4			
1a	Hδ1L$_2$		
2			
3			
4			
1a	Hδ2L$_2$		
2			
3			
4			
1a	Hδ3L$_2$		
2			
3			
4			
1a	Hδ4L$_2$		
2			
3			
4			

Dup.

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Sirius, cont.

ap.	line	n	m+n				
1a	$H\delta 5l_2$						
2							
3							
4							
1a	Hε	13	39	.90	.27	.63	1.58
2		21	54	.60	.06	.54 ✓	1.36
3		37	74	–	–	–	
4		58	88	–	–	–	
1a	$He1l_1$	13	32	.90	.38	.52	1.30
2		21	44	.60	.19	.41 ✓	1.02
3		37	65	–	–	–	
4		59	84	–	–	–	
1a	$He2l_1$	14	25	.90	.51	.39	.97
2		21	35	.60	.33	.27 ✓	.67
3		37	54	.30	.06	.24 ✓	.60
4		60	78	–	–	–	
1a	$He3l_1$	14	20	.90	.62	.28	.70
2		22	30	.60	.42	.18 ✓	.45
3		38	48	.30	.13	.17 ✓	.42
4		60	73	–	–	–	
1a	$He4l_1$	14	18	.90	.67	.23	.57
2		22	27	.60	.47	.13 ✓	.33
3		38	44	.30	.19	.11 ✓	.27
4		61	70	–	–	–	

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–	–	–				
–	–	–				
.96	.30	.66	✓	1.65	.59,	.58
.54	.00	.54	✓	1.36		
–	–	–				
–	–	–				
.75	.30	.45	✓	1.12	.41,	.44
.38	.00	.38	✓	0.95	1.02	.1.10
–	–	–				247 62
–	–	–				
.56	.30	.26	✓	.65	.25,	.28
.22	.00	.22	✓	.55	.64	.70
–	–	–			45 42 38 40 37 214	
.80	.60	.20	✓	.50		
.46	.30	.16	✓	.40	.17,	.19
.15	.00	.15	✓	.37	.43 214 70 284 47	
–	–	–			57 33 27 33 25 25 143 57 200	
.73	.60	.13	✓	.33		.11, .13
.40	.30	.10	✓	.25		
.10	.00	.10	✓	.25	.28	
					.33	

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Sirius, cont.

ap.	line	n	m+n				
1a	$He_1 5l_1$	14	16	.90	.73	.17	.42
2		23	26	.60	.49	.11 ✓	.27
3		38	41	.30	.23	.07 ✓	.17
4		62	67	.00	–	–	
1a	$He_1 l_2$	13	19	.90	.64	.26	.65
2		21	43	.60	.20	.40 ✓	1.0
3		36	65	.30	–	–	
4		58	82	.00	–	–	
1a	$He_2 l_2$	13	23	.90	.55	.35	
2		20	34	.60	.35	.25 ✓	
3		36	54	.30	.06	.24 ✓	
4		58	77	.00	–	–	
1a	$He_3 l_2$	12	18	.90	.67	.23	
2		20	29	.60	.44	.16 ✓	
3		35	45	.30	.17	.18 ✓	
4		57	69	.00	–	–	
1a	$He_4 l_2$	12	15	.90	.77	.13	
2		20	25	.60	.51	.09 ✓	
3		35	41	.30	.23	.07 ✓	
4		56	66	.00	–	–	
1a	$He_5 l_2$	12	14	.90	.82	.08	.20
2		20	23	.60	.55	.05 ✓	.12
3		34	37	.30	.30	.00 ✓	.00
4		56	60	.00	.03	.03 ✓	.07

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–	.90	–			27		4 5 17 / 27	.06
–	.60	–			17		17 / 44	.09
.34	.30	.04	✓	.10	10 12 66	16		
.05	.00	.05	✓	.18	42 / 118	42 / 2		
					23			
–	–	–						
–	–	–						
–	–	–			100 95 / 195	65 195 / 260	40 38 / 78	.39
.38	.00	.38	✓	.95	97	86	26 / 104	.34
								.86
–	–	–						
–	–	–					25 24 26 19 / 94	.23
.56	.30	.26	✓				35 / 129	.26
.19	.00	.19	✓					
–		–						
.82	.60	.22	✓				13 16 22 17 / 65	.16
.47	.20	.17	✓				23 14 / 102	.17
.14	.00	.14						
–	–	–						
.73	.60	.13	✓				9 7 13 10 11 / 40	.10
.40	.30	.10	✓				13 / 63	.10
.11	.00	.11	✓					
–	–	–						
.69	.60	.09	✓		.22		5 0 3 9 6 5 / 28	.05
.36	.30	.06	✓		.25			
.05	.00	.05	✓		.12			.05

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20 b 65

Sirius cont.

Ap.	line	n	m+n					
1a	K	16	18	.90	.78	.12	.30	75
2		24	28	.60	.52	.08	.20 ✓	50
3		41	45	.30	.25	.05	.12 ✓	30
4		66	70					
1a	Hζ	24	56	.90	.28	.62	1.55 ✓	
2		34	72	.60	.05	.55	1.39	
3		55	83		-	-		
4		75	88					
1a	$H\zeta 2_1$	25	51	.90	.36	.54	. ✓	
2		35	67	.60	.14	.46		
3		56	81		-	-		
4		76	87		-	-		
1a	$H\zeta 2_1$	26	41	.90	.52	.38	✓	
2		36	57	.60	.30	.30	✓	
3		57	75	.30	.02	.28		
4		76	84		-			
1a	$H\zeta 3_1$	27	36	.90	.64	.26	✓	
2		37	50	.60	.42	.18		✓
3		58	70	.30	.13	.17		
4		77	82		-			
1a	$H\zeta 4_1$	27	33					
2		38	46					
3		59	67					
4		77	81					

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.69	.60				50	20	
↓	↓	.09	.22 ✓	55	30	12	
.36	.30	.06	.15 ✓	37	55	22	
.05	.00	.05	.12	30	37	15	
					172	69	.17
					75	4300	
					12	12	
					259	111	.18
					43		

.92	.24	.66	1.65	155	
.53	.00	.53	1.37	165	1.55
				139	
				132	1.45
				591	
				145	
				148	

.80.	30	.50	
.42	.00	.42	

.58	.30	.28	
.28	.00	.28	

.87.	.60	.27	✓
.48	.30	.18	
.15	.00	.15	

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Sirius, cont.

Ap.	line	n	m+n
1a	$H_5 2_1$	28	31
2		39	44
3		61	64
4		78	80
1a	$H_5 1_2$	24	50
2		33	62
3		54	81
4		74	87
1a	$H_5 2_2$	23	39
2		32	51
3		53	73
4		73	84
1a	$H_5 3_2$	22	31
2		32	46
3		52	66
4		73	83
1a	$H_5 4_2$	21	28
2		31	40
3		51	60
4		72	79
1a	$H_5 5_2$	21	26
2		31	36
3		50	56
4		72	77

NR used.

H_5 out of focus

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Rejected for reduction because 1a obviously

MC 21743 α Persei Bk 3 p 196 from page 178

ap	Line	n	m+n	$n_1 = 1.3m_1$	$m_1+n_1 = 1.3(m+n)$	n_2	m_2+n_2
1a	Hβ	16	24			12	22
2		33	45				
		33	45				
3		35	48				
4		52	67				
1a	Hβ1l_1	15	19			3	16
2		32	39				
		32	39				
3		34	40				
4		51	55				
1a	Hβ2l_1	15	16				
2		31	33				
		31	33				
3		33	34				
4		51	53				
1a	Hβ1l_2	16	19			4	16
2		34	38				
		33	38				
3		35	39				
4		52	53				
1a	Hβ2l_2	17	19				
2		34	37				
		34	37				
3		36	38				
4		-	-				
1a	4444	13	16			6	9
2		13	18				
3		21	27				
		22	28				
4		39	45				

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1924phae.proj.1037P

ly wrong See p. 178. Repeated

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1924phae.proj.1097P

Rejected

α Persei, continued

Ap.	Line	w	m-w		
		15			
1a	Hγ	25	36	8	20
2		14	31		
3		24 24	43 43		
4		40	55		
1a	$H\gamma 1_1$	15	18	8	12
2		14	21		
3		24 25	31 31		
4		40	46		
1a	$H\gamma 2_1$	15	17		
2		14	17		
3		24 25	25 28		
4		40	42		
1a	$H\gamma 1_2$	14	19		
2		14	20		
3		24 26	31 34		
4		40	48		
1a	$H\gamma 2_2$	14	15		
2		14	15		
3		24 26	25 28		
4		40	43		
1a	4326	16	18		
2		15	20		
3		26 26	31 31		
4		42	47		

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Rejected

α Persei, continued

ap	line	n	m+n
1a	4227		
2			
3			
4			
1a	4215		
2			
3			
4			
1a	H5	7	17
2		18	34
3		31 28	47 44
4		45	55
1a	H5 l2,	7	11
2		18	26
3		31 28	40 38
4		45	50
1a	H5 l2,	-	-
2		18	21
3		31 29	33 31
4		46	47
1a	H5 l2,	7	10
2		18	24
3		30 28	37 35
4		45	49

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Rejected

α Persei continued

ap.	line	n	m+n			
1a	$H_{5}2l_{2}$	7	9			
2		-	-			
3		30 28	36 34			
4		45	46			
1a	H_{ϵ}	16	52	.90	-.08	.98
2		30	59			
3		41	59			
4		51	59			
1a	$H_{\epsilon}1l_{1}$	16	36			
2		31	52			
3		42	56			
4		51	58			
1a	$H_{\epsilon}l_{1}$	17	23			
2		31	41			
3		42	49			
4		52	57			
1a	$H_{\epsilon}3l_{1}$	17	18			
2		32	34			
3		43	46			
4		53	54			
1a	$H_{\epsilon}1l_{2}$	16	40			
2		29	53			
3		40	55			
4		51	57			

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Rejected

α Persei continued

Ap.	Line	n	m+n				
1a	$H_2 l_2$	15	26				
2		29	42				
3		40	47				
4		51	54				
1a	$H_2 3l_2$	15	18				
2		28	34				
3		39	42				
4		50	52				
1a	K	21	56	.90	-.12	~~1.02~~	~~2.55~~
2		37	60				
3		47 46	59 58				
4		54	59				
1a	Kl_1	22	47				
2		38	54				
3		47 46	58 56				
4		54	58				
1a	Kl_1	22	32				
2		38	45				
3		47 47	53 52				
4		54	57				
1a	$K3l_1$	22	24				
2		38	40				
3		47 47	48 48				
4		-	-				

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Rejected

α Persei continued

ap.	line	n	mtn
1a	K4l1	-	-
2		-	-
3		-	-
4		-	-
1a	K1l2	21	48
2		37	58
3		46 46	57 57
4		54	58
1a	H1l2	21	33
2		36	49
3		46 45	52 52
4		53	57
1a	K3l2	20	25
2		35	42
3		45 45	49 49
4		53	56
1a	K4l2	20	22
2		35	39
3		45 45?	48 47?
4		53	55
1a	HJ	7	17
2		43	54
3		50 50	57 56
4		56	59

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Rejected

χ Persei continued

ap	line	w	m + n
1a	$H_3 l_1$	7	11
2		44	53
3		50	57
		50	55
4		56	59
1a	$H_3 l_1$	7	8
2		44	50
3		50	54
		50	51
4		56	58
1a	$H_3 3l_1$	-	-
2		45	46
3		51	53
		-	-
4		-	-
1a	$H_3 l_2$	7	10
2		43	50
3		50	56
		50	55
4		56	58
1a	$H_3 l_2$	7	9
2		43	48
3		50	54
		49	53
4		-	-
1a	$H_3 3l_2$	7	8
2		42	46
3		50	53
		49	51
4		-	-

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MC 2756 α Canis Minoris

ap.	line	n	n+n
1	Hβ		
2			
3			
4			
1	Hβ l_1		
2			
3			
4			
1	Hβ l_2		
2			
3			
4			
1	Hγ		
2			
3			
4			
1	Hγ l_1		
2			
3			
4			
1	Hγ l_2		
2			
3			
4			

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α CMi continued

Ap	Line	w	m+w
1	4326		
2			
3			
4			
1	4227		
2			
3			
4			
1	4215		
2			
3			
4			
1	Hδ		
2			
3			
4			
1	Hδ1 l_1		
2			
3			
4			
1	Hδ1 l_2		
2			
3			
4			

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α CMi cont

Ap	Line	w	m+w
1	$H\zeta$		
2			
3			
4			
1	$H\zeta 1l_1$		
2			
3			
4			
1	$H\zeta 2l_1$		
2			
3			
4			
1	$H\zeta 3l_1$		
2			
3			
4			
1	$H\zeta l_2$		
2			
3			
4			
1	$H\zeta 2l_2$		
2			
3			
4			

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α CMi cont,

Ap.	Line	w	m+w
1	$H_2 3l_2$		
2			
3			
4			
1	K		
2			
3			
4			
1	$K 1l_1$		
2			
3			
4			
1	$K 2l_1$		
2			
3			
4			
1	$K 3l_1$		
2			
3			
4			
1	$K 1l_2$		
2			
3			
4			

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α CMi cont.

Ap.	Line	w	m+w
1	K 2_2		
2			
3			
4			
1	K 3_2		
2			
3			
4			
1	H_3		
2			
3			
4			
1	H_γ		
2			
3			
4			

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Sirius MC 21648 Various focus settings . From Book 3 p. 168

It was expected that n would be constant for a given position, owing to a decrease in intensity, for successively photographed sp

Change of n with order of photographing

Spectrum		3a	3b	3c	3d	3e	3f	3g	3h	3i
n at	Hβ	13	(12)	13	15	16	16	17	18	17
	Hγ	8	8	8	11	9	10	11	10	11
	Hδ	11	9	10	12	12	14	12	13	15
	Hε	16	14	17	15	18	19	19	19	20
	K	19	17	19	18	20	22	21	22	23
	Hζ	27	25	28	29	30	31	31	31	33

Change of n with order of focus

Spectrum		3h	3g	3f	3a	3i	3b	3c	3d	3e
					in focus					
n at	Hβ	18	17	16	13	17	(12)	13	15	16
	Hγ	10	11	10	8	11	8	8	11	9
	Hδ	13	12	14	11	15	9	10	12	12
	Hε	19	19	19	16	20	14	17	15	18
	K	22	21	22	19	23	17	19	18	20
	Hζ	31	31	31	27	33	25	28	29	30

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position in the spectrum. An increase in n appears to take place, corresponding spectra. See note on Bk. 3, p. 118, regarding frosting of prism.

Increase in n goes with order of photographing

No regularity. Change in n presumably due to frosting up.

Under these circumstances m is the most directly significant measured quantity.
l must be corrected.

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Sirius focus plates, continued.

Change of m with focus.

	16.6	16.8	17.0	17.2	17.2	17.4	6	8	18.0
Spectrum	3h	3g	3f	3i	3a	3b	3c	3d	3e
m at Hβ	16	16	14	14	13	13	12	9	11
Hγ	19	18	18	17	16	15	14	12	13
Hδ	22	20	20	18	19	18	17	15	16
Hε	24	22	20	19	21	22	21	21	19
K	3	3	2	2	2	2	2	2	2
Hζ	24	23	23	19	24	25	23	19	18
Width of K	4	4	5	5	5	7	6.5	9	9

Change of l. with focus

Spectrum	3h	3g	3f	3i	3a	3b	3c	3d	3e
l at Hβ	33	35	38	32	42	43	44	45	41
Hγ	37	39	39	35	45	45	48	47	46
Hδ	32	34	32	32	38	39	42	42	39
Hε	24	26	27	25	30	30	33	33	30
Hζ K	12	14	13	12	16	15	19	22	19
K Hζ	42	43	42	39	46	46	49	50	45

Change of l, corrected for change in m, with focus

Spectrum	3h	3g	3f	3i	3a	3b	3c	3d	3e
l at Hβ	33	34	36	36	37	(37)	39	42	39
Hγ	37	40	39	36	43	43	46	48	45
Hδ	32	33	33	34	36	37	39	41	38
Hε	24	26	27	26	27	27	31	29	29
Hζ	12	14	13	14	13	12	16	20	18
K	42	42	42	40	42	42	46	46	43

Corr factor 0

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Spectrum h is at best focus. This can also be seen (visually) from the plate.

Spectrum h is at best focus.

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MC 21645 δ Cassiopeiae. Means and residuals. From p. 26

Line centers only. For wings see p. 38

			Means	Res.	Adopted mean	Res.
1a	Hβ	{1.42 1.42				
2		1.72	1.49	7, 7, 23, 7		
3		1.42				
4		–				
1a	Hγ	{1.50 1.55				
2		1.42	1.46	4, 9, 4, 9, 16		
3		1.55				
4		1.30				
1a	Hδ	{1.55 1.60				
2		1.50	1.54	1, 6, 4, 1, 4		
3		1.55				
4		1.50				
1a	Hε	{2.10 2.30				
2		2.10	2.15	5, 15, 5, 10, 17		
3		2.00				
4		2.27				
1a	K	{1.25 1.45		23, 3, 2, 22, 2		
2		1.50	1.48			
3		1.70				
4		1.50				
1a	Hζ	1.50	1.50			
2		–				
3		–				
4						

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α Aquilae : Means + residuals . From p.20

1	Hβ	0.70	0.71	−, 1
2		0.72		
1	$1l_1$	0.30	0.36	6, 6
2		0.42		
1	$2l_1$	0.07	0.12	5, 5
2		0.17		
1	$3l_1$	0.00	0.00	0, 0
2		0.00		
1	$4l_1$	−0.02	−0.05	3, 2
2		−0.07		
1	$1l_2$	0.40	0.45	5, 5
2		0.50		
1	$2l_2$	0.15	0.20	5, 5
2		0.25		
1	$3l_2$	0.12	0.15	3, 2
2		0.17		
1	$4l_2$	0.02	0.09	7, 8
2		0.17		

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α Aquilae

1	Hγ	0.82	0.81	1, 1
2		0.80		
1	Hγ l_1	0.49	0.39	10, 9
2		0.30		
1	$2l_1$	0.17	0.21	4, 4
2		0.25		
1	$3l_1$	0.12	0.16	4, 4
2		0.20		
1	$4l_1$	0.07	0.11	4, 4
2		0.05		
1	$5l_1$	0.05	0.06	1, 1
2		0.07		
1	$1l_V$	0.49	0.39	10, 9
2		0.30		
1	$2l_V$	0.17	0.21	4, 4
2		0.25		
1	$3l_V$	0.12	0.16	4, 4
2		0.20		
1	$4l_V$	0.07	0.07	0, 0
2		0.07		
1	$5l_V$	0.02	0.01	1, 1
2		0.00		

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2	H6	0.72	0.71	1, 1
1		0.70		
2	H5 l_1	0.52	0.46	6, 6
1		0.40		
2	2 l_1	0.30	0.23	7, 8
1		0.15		
2	3 l_1	0.15	0.10	5, 5
1		0.05		
2	4 l_1	0.07	0.03	4, 3
1		0.00		
		~~0.55~~		
2	$l l_2$	0.55	0.50	5, 5
1		0.45		
2	2 l_2	~~0.22~~ '30	0.23	7, 6
1		0.17		
2	3 l_2	0.15	0.10	5, 5
1		0.05		
2	4 l_2	0.01	0.01	1, 1
1		0.00		

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α Aquilae

1	H_2	>1.50	>1.50	
2		>1.00		
	~~K~~			
1	$1l_1$	0.82	0.81	1, 1
2		0.80		
1	$2l_1$	0.40	0.43	3, 4
2		0.47		
1	$3l_1$	0.30	0.32	2, 3
2		0.35		
1	$4l_1$	0.25	0.25	0, 0
2		0.25		
1	$5l_1$	0.20	0.20	—
2		—		
1	$1l_2$	0.78	0.79	1, 1
2		0.80		
1	$2l_2$	0.35	0.48	13, 14
2		0.62		
1	$3l_2$	0.17	0.25	12, 13
2		0.32		
1	$4l_2$	0.10	0.12	2, 3
2		0.15		
1	$5l_2$	0.02	0.02	—
2				

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1	K	0.82	0.79	3, 2
2		0.77		
1	$1l_1$	0.50	0.53	3, 4
2		0.57		
1	$2l_1$	0.20	0.22	2, 3
2		0.25		
1	$3l_1$	0.15	0.15	—
2		—		
1	$1l_2$	0.50	0.51	1, 1
2		0.52		
1	$2l_2$	0.12	0.06	5, 5 / ~~6, 6~~
2		0.02		
1	$3l_2$	0.05	0.05	—
2		—		

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δ Canis Majoris.
Photometry of absorption lines.

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ε Canis Majoris MC 21722

Preliminary examination of arbitrary intensity scale.

Method.

1. To measure central intensities of selected lines by apertured method
2. To measure direct areas from microphotometer traces
3. To derive energy absorption from microphotometer Traces

Region from q2 to 123 selected for preliminary calibration.

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Preliminary list of lines selected and wave lengths

92	–
92a	–
93	4290
94	4294,6
95	4300,3
95a	4305
96	4308
97	4315
98	4321
99	4326
100	4331
101	4340
102	4352
103	4358-9
104	4367
104a	4369-71
105	4375
106	4383
107	4391 4395
108	4400
109	4409-11
110	4415
111	4417
112	4422
113	4422
113a	4427
114	4435
115	4444
116	4450
117	4455
118	4462,64
119	4468
120	4470,4476 4481
121	
122	4488
123	4494,97

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δ CMa

Measures of lines from 93 to 123.

Spectrum l. Line	l	m	w (successive measures. interval = 1 scale div.) True line	hyp. line
93	42	13	2, 3, 4, 5, 5, 6, 7, 8,	—
94	46	9	2, 3, 5	
95	38	17	1, 3, 4, 5, 6, 7, 8, 8, 9	
95a				
96	46	10	2, 4	
97	42	14	1, 2, 3, 3, 4, 4, 5, 6, 6, 7, 9	
98	49	6	1, 3	
99 to 103 missing				
104	52	6	2, 3, 4, 5, 7	
104a				
105	49	9	1, 2, 2, 3, 4, 6, 6	
106	42	17	1, 1, 1, 2, 3, 3, 3, 4, 5, 5, 6, 7, 8, 9	
106a	51	6	—	
107	45	12	1, 2, 3, 4	
108	46	13	1, 2, 3, 3, 5	
109	54	6	—	
110	51	9	2, 3, 4, 5	
111	43	17	1, 2, 2, 3, 4, 4, 5, 5, 6, 7, 9	
112	52	8	1, 3	
113	54	6		
113a	53	7	2, 10, 11	
114	53	7		
115	46	15	1, 2, 2, 3, 4, 4, 5, 5, 6, 7	
116	53	7	1, 2, 3, 5	
117	54	7	—	
118	53	7	—	
119	50	11	1, 2, 3, 5, 6, 8?	
120	—	—	—	
121	55	6	2, 3, 4, 5, 7	
122	53	8	1, 3, 4, 6	

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MC 21803

Sirius focus plate. See Bk. 3 p 210

Focus on 16.6, all apertures	Trace 85	Spectrum 1a	Line	l	m	n	w
			Hβ	60	17	10	55
			4481	79	1	5	7
RWD			Hγ	61	18	6	46
			Hδ	59	20	7	70
			Hε	52	24	9	72
			K	72	3	10	10
			K(width)				
			Hζ	38	29	18	53
			Hη	18	33	34	75
			Hθ	7	26	51	58
Enter also in first three columns, p. 160	90	2c	Hβ	51	21	19	48
			4481	79	2	11	7
			Hγ	56	23	13	53
			Hδ	51	26	14	60
			Hε	42	30	19	68
			K	65	5	22	16
			K(width)	67	3	22	4
			Hζ	28	34	30	72
			Hη	12	30	50	64
			Hθ	4	20	67	66
	92	3	Hβ	36	25	31	43
			4481	68	4	19	8
			Hγ	40	29	23	49
			Hδ	35	31	24	57
			Hε	26	34	31	80
			K	52	6	34	13
			K(width)	55	2	35	7
			Hζ	12	34	46	68
			Hη	2	23	67	64
			Hθ	0	9	83	48

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Trace	Spectrum	Line	l	m	n	w
91	4	Hβ	21	26	44	70
		4481	57	5	29	9
		Hγ	22	34	36	49
		Hδ	18	36	37	65
		Hε	11	35	45	80
		K	35	7	50	14
		K(width)	38	4	50	7
		Hζ	4	25	62	72
		Hη	0	11	81	70
		~~Hθ~~				
93	1b	Hβ	68	15	10	31
		4481	87	2	5	3
		Hγ	70	16	7	40
		Hδ	65	20	7	55
		Hε	57	23	12	59
		K	75	3	14	8
		K width	77	2	13	6
		Hζ	44	27	21	65
		Hη	24	32	36	61
		Hθ	12	28	62	56

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Sirius Mc 2803 continued. Trace 89 RWD

ap. 2 Trace 16.6 (90) (2a) → see p. 160 16.4 (2d) Trace 88 16.

barions	l	m	n	l	m	n	l
focus Hβ				52	22	19	51
settings. 4481				78	3	12	77
Hγ				55	24	15	54
Hδ				48	27	15	47
Hε				49	21	20	39
K				64	5	22	62
Width K				66	3	22	
Hζ				26	33	32	22
Hη				10	31	50	8
Hθ				5	19	67	4
Hι				4	9	77	4

Line edge Trace 84 Width of spurious wing → Successive depths, interval 10 scale div.

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16.2 (2a) RWD Trace 87			16.8 (2b)			RWD Trace 86 17.0 (2a)		
m	n	l	m	n	l	m	n	
22	20	54	20	18	53	19	20	
3	12	79	2	11	81	2	11	
24	14	55	23	13	56	25	13	
28	17	50	27	14	50	26	16	
31	22	43	28	20	41	30	20	
6	25	65	4	22	64	4	23	
		distance between 4 65	4	22				
36	34	28	33	30	26	34	31	
32	52	12	30	49	8	31	51	
20	68	6	19	66	2	19	68	
10	78	4	10	77	0	10	79	

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MC 21803

Sirius focus plate. Reductions. (Line centers only)

ap.	Line	n	m+n	log ap n	log ap m+n	diff
1a	Hβ	10	21	.90	.40	.50
1b		10	25	.90	.44	.46
2e	3	19	40	.60	.09	.51
3		31	56	-	-	-
4		44	70	-	-	-
2a	5	20	39	.58	.11	.47
2b	4	18	38	.63	.14	.49
2c	1	20	42	.58	.05	.53
2d	2	19	41	.60	.07	.53
1a	4481	5	6	.90	.85	.05
1b		5	7	.90	.79	.11
2e		11	13	.60	.51	.09
3		19	23	.30	.18	.12
4		29	34	-	-	-
2a		11	13	.60	.51	.09
2b		11	13	.60	.51	.09
2c		12	15	.55	.42	.13
2d		12	15	.55	.42	.13
1a	Hγ	6	24	.93	.28	.65
1b		7	23	.86	.30	.66
2e		13	36	.60	.00	.60
3		23	52	-	-	-
4		36	70	-	-	-
2a		13	38	.60	-.03	.63
2b		13	36	.60	.00	.60
2c		14	38	.57	-.03	.60
2d		15	39	.54	-.05	.59

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1924phae.proj.1697P

–	–	
–	–	
–	–	
.80	.30	.50
.52	.00	.52
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
.42	.30	.12
.12	.00	.12
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
.90	.30	.60
.60	.00	.60
–	–	
–	–	
–	–	
–	–	

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Sirius four plate continued

Ap.	Line	n	m+n	log of m	log of m-n	
1a	Hδ	7	27	.90	.23	.67
1b		7	27	.90	.23	.67
2e		14	40	.60	-.05	.65
3		24	55	-	-	
4		37	73	-	-	
2a		16	42	.54	-.08	.62
2b		14	41	.60	-.06	.66
2c		19	45	.51	-.12	.63
2d		15	42	.57	-.08	.65
1a	Hε	9	33	.90	.26	.64
1b		12	35	.90	.26	.64
2e		19	49	.60	-.06	.66
3		31	65	-	-	
4		45	80	-	-	
2a		20	50	.58	-.07	.65
2b		20	48	.58	-.04	.62
2c		22	53	.52	-.10	.62
2d		20	41	.58	.08	.50 ?
1a	K	10	13	.96	.87	.09
1b		14	17	.83	.74	.09
2e		22	27	.60	.46	.14
3		34	40	.30	.17	.13
4		50	57	-	-	
2a		23	27	.56	.46	.10
2b		22	26	.60	.48	.12
2c		25	31	.51	.36	.15
2d		22	27	.60	.46	.14

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–	–	
–	–	
–	–	
–	–	
.66	.00	.66
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
.96	.30	.66
.67	.00	.67
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
.72	.60	.12
.42	.30	.12
.11	.00	.11
.69	.60	.09
.72	.62	.10
.64	.49	.15
.72	.60	.12

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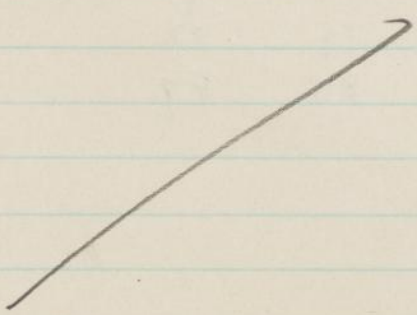
Sirius fours plate contd.

Ap.	Line	n	m+n			
1a	Hζ	18	47	.90	.28	.62
1b		21	48	.83	.26	.57
2e		30	64	–	–	
3		46	80	–	–	
4		62	87	–	–	
2a		31	65	–	–	
2b		30	63	–	–	
2c		34	70	–	–	
2d		32	65	–	–	
1a	Hη	34	67	.90	.30	.60
1b		36	68	.90	.30	.60
2e		50	80	.60	.00	.60
3		67	90	–	–	
4		81	92	–	–	
2a		51	82	–	–	
2b		49	79	–	–	
2c		52	84	–	–	
2d		50	81	–	–	
1a	Hθ	51	77			
1b		62	90			
2e		? 67	87			
3		83	92			
4		–	–			
2a		68	87			
2b		66	85			
2c		68	88			
2d		67	86			

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–	–	
–	–	
–	–	
.92	.30	.62
.62	.00	.62
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
–	–	
.90	.30	.60
.60	.00	.60
–	–	
–	–	
–	–	
–	–	



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MC

Sirius focus plate 21803

Spectra, order of photographing

		1a	2a	2b	2c	2d	2e	4	3	1b	1c
In with order	Hβ		39	38	42	41	40				
	4481		13	13	15	15	13				
	Hγ		38	36	38	39	36				
	Hδ		42	41	45	42	40				
	Hε		50	48	53	41	49				
	K		27	26	31	27	27				
	Hζ		65	63	70	65	64				
	Hη		82	79	84	81	80				
	Hθ		87	85	88	86	87				

Spectra, order of focus

	Spec.	2c	2d	2e	2b	2a
	Focus	16.2	16.4	16.6	16.8	17.0
In	Hβ	42	41	40	38	39
	4481	15	15	13	13	13
	Hγ	38	39	36	36	38
	Hδ	45	42	40	41	42
	Hε	53	(41)	49	48	50
	K	31	27	27	26	27
	Hζ	70	65	64	63	65
	Hη	84	81	80	79	82
	Hθ	88	86	87	85	87

check?

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1924phae.proj:1097P

MC

Spectra, order of focus. Focus plate 21803

Spec.	2c	2d	2e	2b	2a
Focus	16.2	16.4	16.6	16.8	17.0
l Hβ	(51)	52	57	54	53
4481	(77)	78	79	79	81
Hγ	(54)	55	56	55	56
Hδ	(47)	48	57	50	50
Hε	39	49	42	43	41
K	(62)	64	65	65	64
Hζ	(22)	26	28	28	26
Hη	(8)	10	12	12	(8)
Hθ	4	5	4	6	(2)

Best focus where l is a minimum

2c at best focus

	2c	2d	2e	2b	2a
	16.2	16.4	16.6	16.8	17.0
m Hβ	(22)	22	21	20	19
4481	(3)	3	2	2	2
Hγ	(24)	24	23	23	(25)
Hδ	(28)	27	26	27	26
Hε	(31)	21	30	28	30
K	(6)	5	5	4	4
Hζ	(36)	33	34	33	34
Hη	(32)	31	30	30	31
Hθ	(20)	19	20	19	19

Best focus where m a maximum

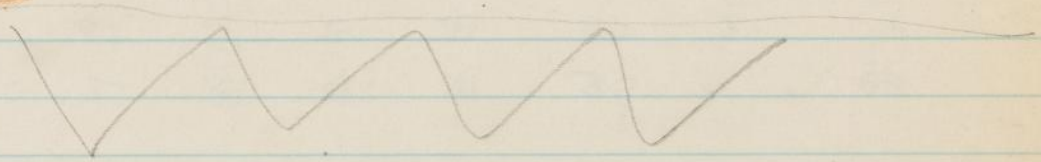
2c at best focus

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Sirius, focus Resulting central light, in log intensity

Spectrum	2c	2d	2e	2b	2a
Setting	16.2	16.4	16.6	16.8	17.0
Hβ	.53	.53	.51	.49	.47
4481	.13	.13	.09	.09	.09
Hγ	.60	.59	.60	.60	.63
Hδ	.63	.65	.65	.66	.62
Hε	.62	-	.66	.62	.65
K	.15	.14	.13	.12	.10
Hζ					
Hη					
Hθ					



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MC 21789

ε Orionis See Bk. 3, p. 206, 184

ap.	Line	n	n+n	log ab n	log ab n-m	Diff	Diff (mag)
1	Hβ	17	20	Rejected	See Bk 3 p 184		
2		14	17	.60	.48	.12	✓ .30
3		25	30	.30	.22	.08	✓ .20
4		46	52		–	–	
1	4471	13	15	Rejected	See Bk 3 p 184		
2		7	9	.60	.41	.19	.47
3		12	16	.30	.20	.10	.25
4		28	34		–		
1	4387	14	16	Rejected	See Bk 3 p 184		
2		6	8		–		
3		13	16	.30	.39	.09	.22 wrong
4		28	34	.00	.08	.08	✓ ~~.20~~
1	Hγ	15	17	Rejected	See Bk 3 p 184		
2		7	11	.60	.39	.21	.52
3		14	20	.30	.17	.13	.32
4		30	40		–		
1	4116	5	6	~~.90~~	~~.69~~	~~.21~~	~~.52~~
2		7	9	.60	.51	.09	.22
3		16	19	.30	.24	.06	✓ .15
4		32	37	–	–	–	
1	Hδ	5	8	~~.90~~	~~.60~~	~~.30~~	~~.75~~
2	~~4340~~ 4101	8	12	.60	.43	.17	.42
3		16	22	.30	.17	.13	✓ .32
4		32	42	–	–		

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–	–	–		
–	–	–		
.39	.30	.09 ✓	.22	.23
.08	.00	.08 ✓	.20	
–				
.43	.30	.13	.32	.20
.08	.00	.08 ✓	.20	.31
.47	.60	.13	.32	.24
.21	.30	.09	.22	.20
–	–	–		
.47	.30	.17	.42	.35
.14	.00	.14 ✓	.35	.40
–	–			
.65	.60	.05	.12	.17
.24	.30	.06 ✓	.15	.17
.08	.00	.08 ✓	.20	
.90	.60			
↓	↓		.~~75~~	.~~35~~
.46	.30	.16 ✓	.40	.36
.14	.00	.14 ✓	.35	

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ε Orionis continued

Ap.	Line	n	mtn				
1	4097	5	7	.90	.60	.30	~~.75~~
2		7	9	.60	.51	.09	.22
3		17	20	.30	.24	.06	✓ .15
4		~~32~~	~~37~~	—	—		
1	4026	5	7	.90	.64	.26	~~.65~~
2		8	10	.60	.52	.08	.20
3		18	22	.30	.22	.08	.20
4		36	40		—	—	
1	Hε	6	10	.90	.68	.22	~~.55~~
2		12	16	.60	.44	.16	.40
3		22	29	.30	.18	.12	✓ .30
4		43	50	—	—		
1	Hζ	14	18	.90	.69	.21	~~.52~~
2		21	27	.60	.46	.14	✓ .35
3		36	42	.30	.11	.19	✓ .47
4		56	62	.00	—	—	

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.90	.60	.30		~~.75~~	
.36	.30	.06	✓	.15	.18
.06	.00	.06	✓	.15	.15
—	—				
.71	.60	.11		~~.27~~	
.38	.30	.08	✓	.20	.19
.06	.00	.06	✓	.15	.17
—	—				
.75	.60	.15		~~.37~~	
.45	.30	.15	✓	.37	.32
.09	.00	.09	✓	.22	.30
—					
.77	.60	.17	✓	~~.42~~	
.41	.30	.11	✓	.27	.33
.09	.00	.09	✓	.22	

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Straight 20–65

NC 21743 α Persei repetition Bk 3 p. 214 cf Bk 3 p. 196, Bk. 6 p 108

Ap.	Line	m_2	$m_2 + m_2$				
1a	Hβ	12	22	.90	.68	.22	
2		26	40	.60	.31	.29	✓
3		41	55	.30	.08	.22	✓
4		63	71	–	–	–	
1a	Hβ $1l_1$	13	16	.88	.81	.07	
2		26	32	.60	.47	.13	✓
3		42	48	.28	.18	.10	✓
4		63	65	–	–	–	
1a	Hβ $1l_2$	12 ✗	16	90	.69	.21	
2		25	33	.60	.42	.18	✓
3		40	49	.30	.15	.15	✓
4		62	68		–		
1a	4444	6	9	.90	.78	.12	
2		15	21	.60	.40	.20	
3		26	33	.30	.19	.11	✓
4		47	54		–	–	
1a	Hγ	8	20	.90	.52	.38	
2		18	38	.60	.14	.46	
3		29	52	–	–		
4		49	67	–	–		
1a	Hγ $1l_1$	8	12	.90	.78	.12	
2		18	25	.60	.39	.21	✓
3		29	40	.30	.17	.13	✓
4		49	59		–		

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1924phae.proj.1097P

Rejected. See original record

–	–	–	
.83	.60	.23	✓
.58	.30	.28	✓
.14	.00	.14	
–	–	–	
.72	.60	.12	✓
.41	.30	.11	✓
.04	.00	.04	✓
–			
.75	.60	.15	✓
.47	.30	.17	✓
.08	.00	.08	
.76	.60	.16	
.47	.30	.17	✓
.08	.00	.08	✓
–	–	–	
–	–	–	
.75	.30	.45	✓
.37	.00	.37	
–	–		
.75	.60	.15	✓
.50	.30	.20	✓
.15	.00	.15	✓

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Rejected

δ Persei 2

Ap	Line	n_2	$m_2 + n_2$			
1a	$H\gamma$ l_2	8	10	.90	.84	.06
2		18	25	.60	.39	.21
3		29	39	.30	.13	.17 ✓
4		49	57		—	
1a	4325	9	11			
2		20	24			
3		29	37			
4		49	58			
1a	4227	9	15			
2		19	27			
3		32	43			
4		54	62			
1a	4215	10	12	.90	.86	.04
2		21	24	.60	.51	.09 ✓
3		33	41	.30	.18	.12 ✓
4		55	60	.00	—	—
1a	H8	12	24			
2		22	42	.93	.60	.33 ✓
3		38	58	.67	30	.37 ✓
4		57	70		-	
1a	H8 l_1	11	15			
2		22	29			
3		38	46			
4		57	61			

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.68 .60

.67	.60	.07	✓
.43	.30	.13	✓
.07	.00	.07	✓

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Rejected

αPersei 2

Ap.	line					
1a	$H\delta 1_2$	12	17			
2		22	31			
3		39	50			
4		57	65			
1a	Hε	20	67	.90	.00	90
2		38	72	—		
3		51	77	—		
4		68	77	—		
1a	$H\varepsilon 1_1$	19	50	-		
2		37	64	-		
3		50	71	—		
4		67	75	-		
1a	$H\varepsilon 2_1$	19	32			
2		36	49			
3		49	60			
4		69	73			
1a	$H\varepsilon 3_1$	18	23			
2		35	39			
3		—	—			
4		-	-			
1a	$H\varepsilon 1_2$	20	31			
2		39	64			
3		52	74			
4		68	77			

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1924phae.proj.1097P

.86 .00 .86

.90 .80 .60

(.39 .00)

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Rejected

α Persei 2

Ap.	Line					
1a	$H\varepsilon 2l_2$	21	33			
2		39	51			
3		52	66			
4		68	74			
1a	$H\varepsilon 3l_2$	21	26			
2		40	43			
3		–	–			
4		–	–			
1a	K	26	62	.90	.34	.56
2		45	75	–	–	
3		59	79	–	–	
4		72	77	–	–	
1a	Kl_1	25	60			
2		45	70			
3		58	76			
4		72	77			
1a	$K2l_1$	25	40			
2		44	58			
3		58	70			
4		72	75			
1a	$K3l_1$	–	–			
2		44	52			
3		–	–			
4		–	–			

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.66 .00 .66

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Rejected

α Persei 2

Ap.	Line		
1a	$K1_2$	27	65
2		45	71
3		60	77
4		72	77
1a	$K2_2$	27	47
2		46	61
3		60	72
4		72	75
1a	$K3_2$	28	36
2		46	53
3		—	—
4		—	—
1a	3889 H3	37	57
2		55	69
3		67	75
4		74	77
1a	$H\gamma 1_1$	36	48
2		—	—
3		—	—
4		—	—
1a	$H\gamma 2_1$	—	—
2		—	—
3		—	—
4		—	—

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Rejected

α Persei 2

Ap.	Line		
1a	$H_3 3l_1$	–	–
2		–	–
3		–	–
4		–	–
1a	$H_3 l_2$	37	54
2		–	–
3		–	–
4		–	–
1a	$H_3 2l_2$	38	47
2		–	–
3		–	–
4		–	–
1a	$H_3 3l_2$	–	–
2		–	–
3		–	–
4		✓	–

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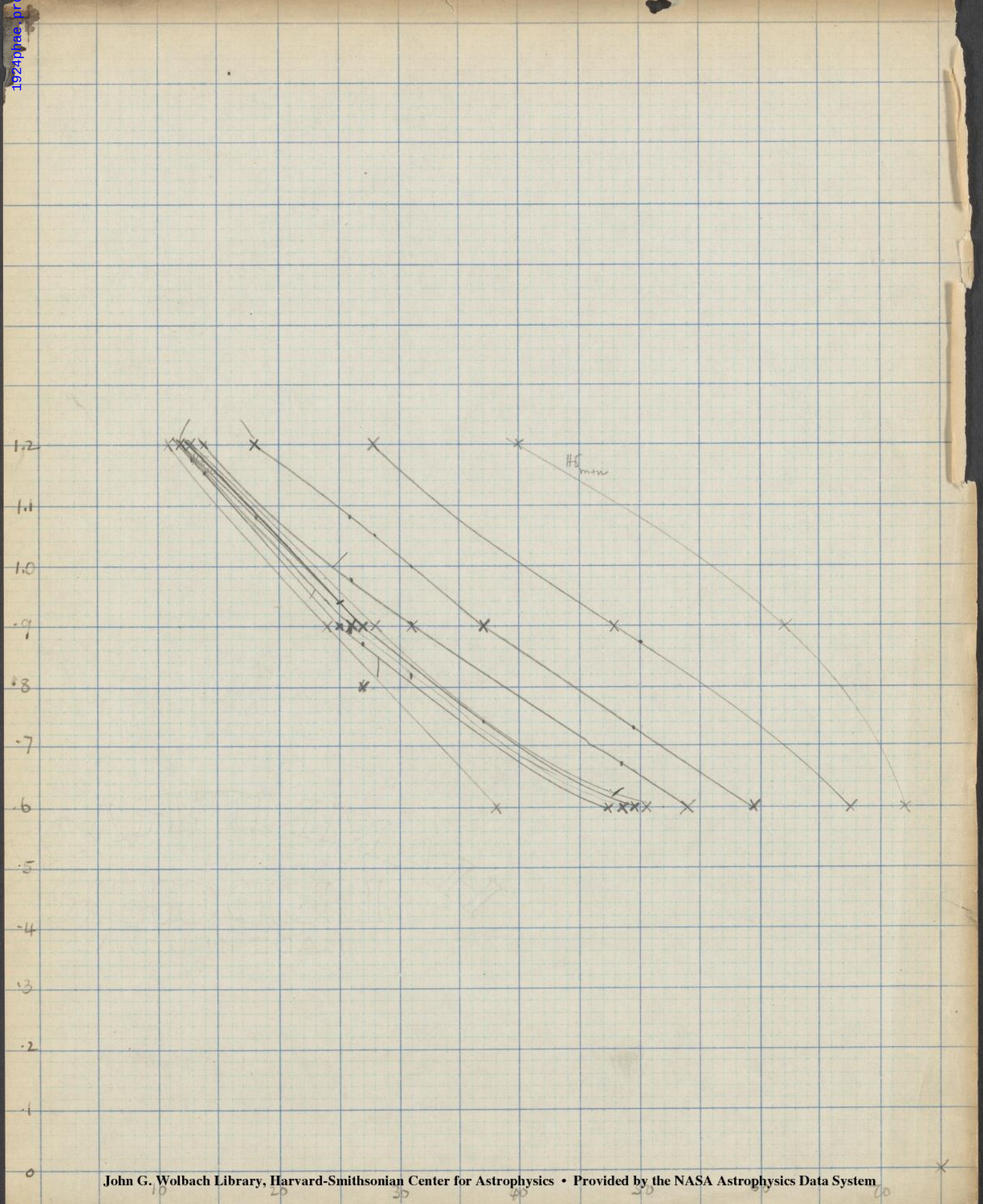
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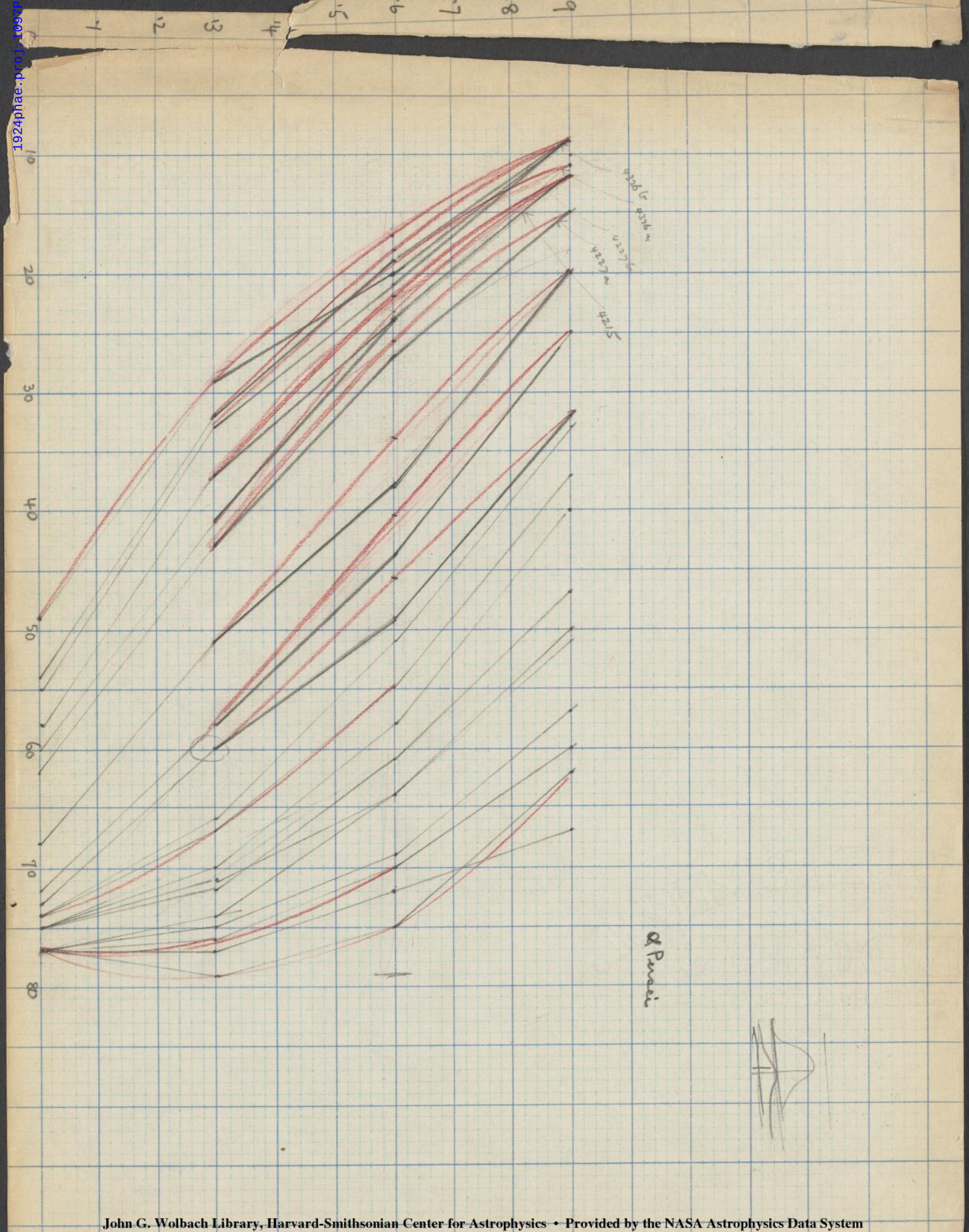
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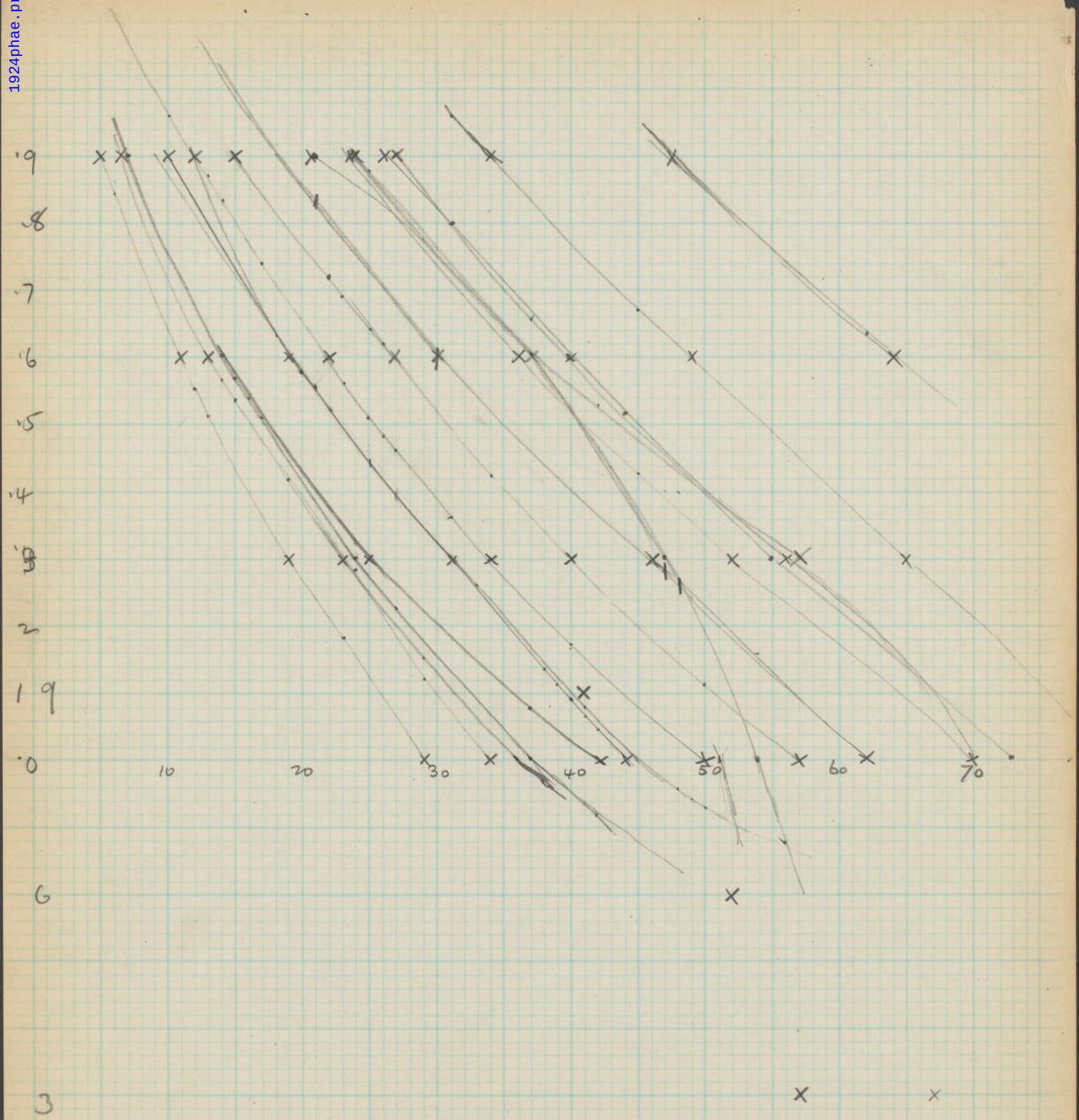
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