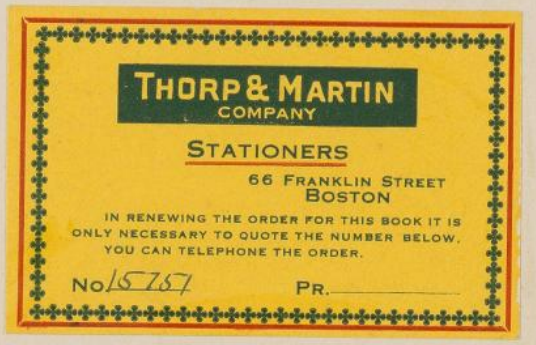
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KG 11365.689



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1930phae.proj..688

This, with book 3, contains observations made the summer of 1930 on ~~plates~~ traces of plates of H.H.P. on α Cyg and Vega. They have not been worked up (Sept. 1936) and may be found in this file.

Carol Jane Anger.

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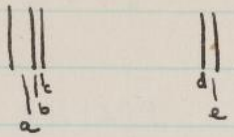
2

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Measures for magnification



	W 458	W445 highest	W445		W459
a	45.2268	43.6494	43.6473	e	44.6312
	78	89	61		24
	82	72	84		50
	45.2276		43.6473		44.6329
b	45.2958	7232	7188	d	44.6950
	58	79	7228		28
	60	29	7259		80
	45.2958		43.7225		44.6953
c	45.3213	7450	7390	c	48.3679
	45	23	88		33
	70	46	94		50
	45.3243		43.7391		48.3654
d	48.9819	47.4232	47.4178	b	48.3811
	770	60	35		774
	787	57	71		764
	48.9795		47.4161		48.3783
e	49.0463	47.4550	47.4559	a	48.4610
	49	41	59		14
	52	60	32		10
	49.0455		47.4550		48.4611
	3.6552		3.6770		3.6726
	3.7212		3.7159		3.7350

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	W468	W443	
a	48.3503		
	00		
	490		
	48.3498		
b	48.4219		
	13		
	35		
	48.4222		
	48.4358	53.4663	
	4400	4722	
	390	750	
	48.4383	53.4712	
	52.1239	57.1470	53.6228
	28	503	75
	22	472	50
	52.1230	57.1482	
	52.1737	57.1873	53.4770
	20	64	54
	18	61	40
	52.1725	57.1866	

3.6847	3.6770
3.7342	3.7154

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	W443	W445	W458	W459
K	54.1279	57.9350	59.2636	56.5940
	57.8225	57.9095	55.5945	52.9170
	57.8500	54.2150	55.5360	52.8691
	3.7226	3.7200	3.7276	3.7249
	3.6946	3.6945	3.6696	3.6770
~4200	55.4030	56.3568	58.6075	52.1580
	59.0570	56.3170	54.9520	48.5000
	59.1038	52.6390	54.8854	48.4350
	3.7008	3.7178	3.7221	3.7230
	3.6540	3.6780	3.6555	3.6580

W467	W468
53.4895	? 53.714
53.4461	(53.845)
(49.8175)	56.447
49.7495	
3.7900 (6720)	
3.6976 (6236)	
51.5530	
51.5040	
(47.8970)	
49.8320	
3.7210 6560	
3.6720 6070	

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μ φ4544 W445 K-H ε 0.007

λ	x
	0
	1
	2
	3
	4
	5
	6
3922.9	6.3
3930.310	29

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x	u_0	u	u'
0	100.8		30.3
	-		30.1
			30.0
			29.8
			29.7
5	100.9	30.3	29.5
		31.2	29.3
6.3		31.3	29.3
		30.7	29.2
		29.8	29.1
			29.0
10			28.9
			28.5
			28.3
		28.9	28.0
		28.8	27.7
15		28.4	27.5
			27.5
			27.3
			27.1
			27.0
20			27.0
		27.7	26.8
		27.9	26.7
		27.6	26.6
			26.4
25			26.3
			26.2
			26.1
		26.3	25.9
		27.8	25.8
30		27.1	25.7

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10

3932. 36.

3933 39.7

3938.911 54.6

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	25.9	26.6
		26.4
	26.8	25.2
	26.4	26.1
35	26.8	25.0
	26.6	24.9
	28.0	24.8
37.5	30.8	24.7
38.0	34.0	24.7
38.5	45.0	24.6
39.0	55.0	24.5
39.7	70.0	24.4
40.0	65.0	24.3
40.5	~~55.0~~ 52.0	24.3
41.0	45.0	24.2
41.5	35.0	24.2
42.0	30.0	24.1
42.5	27.6	24.1
43.0	26.0	24.0
44.0	24.8	23.9
45.0	24.1	23.8
46.0		23.7
		23.5
		23.4
		23.2
50.0		23.0
		22.9
		22.8
		22.7
	23.3	22.5
54.6	23.7	22.4

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1930phae.proj..688A

3944.018 71.8

3949

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55.	101.0	23.3	22.3
		22.8	22.2
		22.2	22.1
		22.0	22.0
60			21.9
65			21.2
69			21.0
70		21.4	20.9
		22.6	20.9
71.8		23.8	21.8
72.0		23.7	21.8
		21.7	20.7
74		—	20.6
75			20.5
80			20.1
		20.9	20.0
		21.3	20.0
		21.5	19.9
		21.0	19.8
85		20.4	19.7
		20.6	19.7
		20.7	19.6
		20.8	19.4
		20.3	19.3
90		20.3	19.2
		20.9	19.1
		20.9	19.0
		20.5	19.0
		20.8	18.9
95		20.6	18.8

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1930phae.proj..6884

3956.465 110.8

3959 114.6

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1930phae.proj..688A

96	~~96~~	20.8	18.8
		20.8	.7
		20.7	.6
		20.7	.5
100		20.7	.4
		21.4	.3
		21.8	.2
		21.8	.1
		21.8	.0
105		21.7	.0
		22.1	17.9
		22.1	.8
		22.6	.7
		23.2	.6
110		24.0	.5
110.8		24.2	.5
111		24.1	~~.5~~
		23.2	~~.4~~
		23.7	~~.3~~
		24.5	.2
114.6		24.8	.1
115		24.7	.1
		24.3	.0
		25.2	.0
		26.0	16.9
		26.3	.8
120	101.1	26.7	.8
		27.2	.7
		28.2	.6
		29.0	.5

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1930phae.proj..688A

3961.537 125.0

3968.494 145.7

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124	30.2	16.5
125	32.9	.4
	31.8	.3
	31.4	.2
	32.9	.1
	33.8	.0
130	34.3	15.9
	35.0	.8
	35.8	.7
	37.2	.6
	38.3	.5
135	40.1	.4
	41.7	.3
	43.0	.2
	45.5	.1
	47.4	.0
140	50.2	.1
	50.5	.0
	53.1	.0
	57.1	14.9
143.5	58.1	14.8
144	60.0	14.8
144.5	64.5	.7
145.0	71.5	.7
145.7	76.6	.7
146.0	75.0	.6
146.5	71.2	.6
147.0	69.5	.6
147.53	69.1	.5
148.0	69.5	.5

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1930phae.proj..688A

3970.078 1.50.6

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148.5	1L	71.0	.4
149.0		73.9	.3
249.5		76.0	.3
150.0		78.5	.2
150.6		80.7	.2
151.0		80.4	.2
151.5		78.7	.1
152.0		75.5	.1
152.5		72.5	.0
153.0		69.4	.0
153.5		67.6	.0
154.0		66.1	13.9
154.5		63.9	13.9
155.0		60.9	.9
155.5		59.2	.8
156.0		58.9	.8
157.0		55.5	.7
158		53.0	.6
159		50.8	.5
160	101.2	48.5	.4
		46.1	.3
		43.3	.2
		42.0	.1
		39.6	.1
165		37.0	.0
		35.8	12.9
		34.0	.8
		33.7	.7
		30.8	.7
170		30.0	.6

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		28.5	.5
		27.6	.4
		26.7	.3
		25.6	.2
175		25.0	.1
		23.0	.0
		22.7	11.9
		22.0	.9
		21.0	.8
180	101.3	20.9	11.8
		19.9	.7
		18.7	.6
		17.8	.5
		17.3	.4
186		17.2	.3
		16.6	.2
		16.2	.1
		15.6	.0
		15.0	.0
190		15.0	10.9
		14.8	.8
		14.0	.7
		13.8	.6
		13.3	.5
		12.9	.4
defect 196		12.9	.3
200		12.0	.0
		11.5	.0
		10.9	9.9
		10.7	9.8

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1930phae.proj..688A

3997.113 212.3

4005.256 252.6

4012.390 272.4

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		10.5	9.7
205		10.2	.6
		10.3	.5
		10.3	.4
		10.0	.3
		10.0	.2
210		9.7	.1
		9.3	.0
		9.5	.0
212.3		9.6	8.9
213.			8.8
215			8.7
220			8.4
225			8.0
230			7.6
235			7.3
240			7.1
245			6.9
250	M1.4		6.8
252.6			6.8
255.			6.7
260			6.4
265			6.3
270			6.1
272.4			5.9

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μ Φ 4567 W445 K-H G 0.006

	43	99.8	66.0
	44	66.2	65.5
	45	66.5	65.3
3926.2	45.5	66.6	65.2
	46	66.4	65.1
		65.9	64.9
		65.1	64.8
			64.7
	50	64.9	64.5
		65.5	64.2
3928	51.2	65.6	64.1
		65.3	64.0
		64.6	63.8
		64.4	63.7
	55	99.9	63.6
			63.7
		63.9	63.0
		64.8	62.9
3930.310	58.1	64.8	62.8
		63.9	62.7
	6.0		62.6
		62.5	62.4
		63.1	62.3
		63.9	62.1
3932.020	63.4	64.0	62.1
		63.9	62.0
	64.3.	63.9	61.9
	65	64.4	61.8
	65.5	64.8	61.8
	66.0	65.4	61.7

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	66.5		67.0	61.6
	67.0		69.2	61.5
	67.5		73.0	61.4
	68.0		78.0	61.3
	68.5		83.0	61.2
	69.0		86.0	61.2
3933.	69.52		86.2	61.1
	70.0	100.0	83.0	61.0
	70.5		78.0	60.8
	71.0		74.0	60.8
	71.5		69.8	60.7
	72.0		67.0	60.6
	72.5		64.7	60.5
	73.0		63.0	60.4
	73.57		61.7	60.3
	74.0		61.7	60.2
	75.0		61.8	60.1
	76		61.5	59.9
			61.0	59.8
			60.7	59.7
			~~58~~	59.5
	80		58.4	59.3
			58.8	59.1
				58.9
			59.6	58.7
	~~84.4~~		60.3	58.5
3938.411	84.4		60.5	58.4
	85	100.1	60.0	58.3
			59.1	58.2
			58.8	58.0

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	88		58.3	57.9
			57.1	57.7
	90		56.2	57.5
	91		57.0	57.3
	95			56.6
	98			56.0
	99		56.4	55.9
	100	100.2	56.6	55.8
			57.7	55.7
3944.018	101.4		57.8	55.6
	102		57.6	55.5
			55.9	55.3
			55.7	55.2
			55.7	55.0
			55.3	54.9
			55.3	.8
		100.3	54.8	.7
			55.0	.5
	110		55.8	.3
			57.0	.2
3949	111.3		57.0	.1
			56.8	.1
			56.1	53.9
			55.8	.8
	115	100.4	56.4	.7
			56.3	.6
			55.2	.4
			54.7	.3
			54.7	.1
	120	100.5	54.7	52.9

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		55.0	.7
		56.3	.6
		56.0	.5
		55.9	.3
125		56.7	.2
		56.6	.0
		55.1	51.8
	100.6	55.7	.7
		56.3	.6
130		56.5	.5
		55.9	.3
		55.7	.1
		56.0	.0
		57.0	50.8
135	100.7	57.7	.7
		58.2	.6
136.4		58.3	.5
		58.0	.4
		57.7	.3
		58.1	.2
140		59.4	.0
		54.4	49.9
		59.3	.8
		60.0	.7
		60.0	.5
145	100.8	60.5	.3
		61.0	.1
		61.3	48.9
		61.2	.8
		62.0	.7
150		63.0	.5

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			63.5	.2
			64.3	.1
			65.5	47.9
			67.2	.8
3961.537	154.5		67.7	.7
	155		67.6	.6
			67.6	.5
			67.4	.3
			68.1	.2
			68.4	.0
	160	100.9	69.3	46.8
			71.2	.7
	161.5		71.5	.6
			71.3	.64
			72.0	.42
			72.8	.20
	165		74.4	45.8
			75.8	45.8 .7
			77.5	.6
			78.9	.64
3966	168.6		79.3	.52
			79.5	41
	170	101.0	80.4	45.2
	170.5		81.6	.1
	171.0		82.1	.0
	171.5		82.7	44.9
	172.0		83.9	.9
	172.5		85.0	.9
	173.0		85.7	.8
	173.5		86.3	.8

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	174.0			88.0	.7
	174.5			90.1	.7
3968.494	175.0			91.1	.6
	175.5			90.7	.5
	176.0			90.1	.4
	176.2			90.0	.3
	177.0			90.5	.2
	177.5			91.1	.1
	178.0			92.2	.0
	178.5			93.0	.0
	179.0			93.6	43.9
3970.078	179.4			93.7	.8
	180.0		101.1	93.2	.7
	180.5			92.2	.7
	181.0			91.7	.6
	181.5			90.6	.6
	182.0			89.9	.5
	182.5			89.2	.4
	183.0			88.5	.3
	183.5			87.9	.2
	184.0			87.2	.1
	184.5			86.3	.1
	185.0		101.2	85.5	.0
	185.5			85.0	42.9
	186.0			84.2	.9
	186.5			83.5	.8
	187.0			83.5	.8
	187.5			82.7	.7
	188.0			81.0	.7
	188.5			79.9	.6
	189.0			78.9	.5

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	189.5		78.5	.4
	190		78.0	.3
			77.0	.2
			74.5	.1
			73.4	41.9
			72.6	.8
	195	101.3	71.3	.7
			68.9	.5
			67.2	.3
			67.2	.2
			65.9	.0
	200		64.5	40.9
			63.0	.7
			61.3	.6
			60.0	.4
			59.3	.2
	205		58.7	.1
3979	205.6		58.5	.0
	206		58.0	39.9
			56.6	.8
			54.9	.7
			53.8	.5
	210	101.4	52.8	.4
			52.4	.2
3982	211.3		52.3	.1
			51.2	.0
			49.8	38.9
			49.3	.8
	215		48.8	.7
			48.6	.6
			47.4	.4

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1930phae.proj..688A

	218		46.6	.2
			46.1	.0
	220		45.0	37.9
			44.7	.8
			44.0	.7
			43.9	.5
			42.6	.3
	225	100.5	41.6	.1
			41.0	.0
			40.3	36.8
			40.7	.7
			40.8	.6
	230	101.6	39.9	.5
			38.9	.3
			38.9	.1
			38.0	.0
			37.0	35.8
	235		36.7	.7
			37.1	.5
			36.8	.4
			36.1	.3
			36.2	.1
	240	101.7	34.9	34.9
			36.2	.8
3997	241.2		36.3	.8
			36.0	.7
			35.5	.5
			34.4	.4
	245	101.8	33.8	.3
			34.0	.1
			34.1	.0
			33.4	33.8

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1930phae.proj..688A

μφ4546 W445 Hδ 0.007

	27	99.8	60.0	60.0
			60.4	59.9
			60.8	.8
4002	30		60.9	.6
			60.6	.5
			60.0	.3
			60.0	.2
			61.1	.1
			60.0	58.9
			59.5	.7
			58.8	.6
			58.9	.5
			59.0	.3
	40		59.9	.2
			60.7	.0
(4005.256	43		60.7	57.9
			60.1	.9
			58.7	.8
			57.8	.6
	45		57.6	.5
	58		55.5	55.5
			55.8	55.2
	60		56.6	55.1
(401 2.390	61		56.9	54.9
			56.3	.8
			55.3	.6
			54.7	.5
	65	99.9	54.4	.4
	93	100.0		51.0
			51.2	50.9
	95		52.0	.8

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1930phae.proj..688A

4024	95.6	52.1	50.8
	96.0	52.0	50.7
		51.7	.6
		51.0	.5
		50.8	.4
	100	51.2	.2
?		51.6	.1
		51.2	.0
		50.5	.0
		50.7	49.9
4028.348	105	50.8	.8
		50.0	.7
		49.0	.6
	150	100.2 45.2	45.2
		45.5	.1
		47.5	.1
		49.8	.0
4045.827	153.1	49.8	.0
		48.5	44.9
	155	46.0	.8
		44.8	.8
		44.7	.7
		44.9	.7
		44.9	.6
	160	44.8	.5
		44.7	.4
		45.0	.3
		45.3	.2
? 4048.763	163.2	45.4	.2
		44.7	.1
	165	44.0	.0

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1930phae.proj..688A

	173	100.3	43.4	43.4
			44.2	.3
	175		45.1	.2
4053.831	175.5		45.3	.2
			45.0	.2
			43.9	.1
			43.1	.0
	198	100.4	41.8	41.8
			43.0	.7
	200		44.4	.6
4063.607	200.3		44.7	.6
			44.0	.5
			41.9	.4
	202.3		41.4	.4
			41.3	.3
			41.3	.3
	205		41.9	.2
			42.0	.2
			41.8	.1
			42.0	.0
			42.1	.0
	210		41.9	.0
			42.1	.0
			42.2	40.9
			42.1	.9
			41.8	.8
	215	100.5	41.3	.8
			41.3	.8
			41.7	.7
			41.5	.7
			41.9	.6

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1930phae.proj..688A

	220	100.6	42.6	.6
			43.9	.5
4071.751	221.8		44.8	.5
			44.7	.5
			43.3	.4
			42.2	.3
	225		41.7	.3
			41.8	.2
			42.0	.2
			42.2	.1
			42.0	.0
	230		41.9	.0
			41.7	.0
			41.3	.0
			42.0	39.9
			42.7	.9
	235	100.7	43.0	.8
			44.1	.8
4077.726	236.9		44.9	.8
			44.9	.8
			43.5	.7
			42.2	.7
	240		42.2	.6
			42.7	.6
			42.6	.5
			42.9	.5
			43.1	.4
	245	100.8	43.7	.4
			44.1	.3
			44.3	.3
			43.9	.2

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1930phae.proj..688A

	44.2	.2
250	44.8	.1
	44.6	.0
	44.8	.0
	44.9	.0
	46.0	38.9
	45.8	.9
	45.8	.9
	46.0	.8
	46.3	.8
	46.4	.8
260	47.1	.7
	48.2	.6
	49.3	.6
	49.1	.5
	49.4	.4
Log	50.5	.3
	51.0	.2
	51.3	.2
	52.0	.2
	52.2	.1
270	53.0	.1
	53.3	.0
	54.1	.0
	54.8	.0
	56.9	37.9
275	57.0	.9
275.5	57.0	.9
276	57.2	.8
	58.8	.8
	61.0	.8

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1930phae.proj..688A

	279		62.0	37.8 ~~65.0~~
			65.0	37.7
	280.6		66.3	.7
			66.3	.7
	281.5		66.4	.6
			67.0	.6
			67.9	.5
			69.0	.5
	285		70.0	.4
			71.8	.3
			73.7	.2
			75.0	.2
			76.0	.2
	290	100.9	78.0	.1
	290.5		79.2	.1
	291		80.0	.1
	291.5		80.7	.1
	292		81.4	.0
	292.5		82.3	.0
	293		83.6	.0
	293.5		84.6	.0
	294.		85.4	.0
	294.5		86.1	.0
	295		86.9	.0
	295.5		87.8	36.9
	296.		89.0	.9
	296.5		90.3	.9
	297.		91.3	.9
4101.750	297.3		91.5	.8
	298		91.0	.8
	298.5		90.0	.8

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1930phae.proj..688A

299	88.6	36.8
299.5	87.5	.8
300.0	86.0	.7
300.5	84.9	.7
	84.0	.7
	82.8	.7
	81.6	.7
	80.3	.6
	79.3	.6
	78.2	.6
	77.3	.5
	76.8	.5
305.	76.2	.5
	74.9	.4
	73.0	.4
	71.8	.3
	70.0	.2
310	69.3	.2
	67.2	.1
	65.4	.1
	64.4	.0
	63.3	.0
315	61.9	35.9
	61.5	.9
	59.6	.8
	58.5	.8
	56.9	.8
320	56.2	.7
	54.7	.7
	54.7	.6
	53.7	.5

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1930phae.proj..688A

	324		53.1	35.5
			56.8	.4
			51.9	.4
			50.1	.3
			48.0	.3
			46.8	.2
	330	101.0	46.8	.1
			45.7	.1
			45.3	.1
			44.3	.0
			43.4	.0
	335		43.4	.0
	335.4		43.5	.0
			43.2	34.9
			42.9	.9
			42.5	.8
			41.9	.8
	340		41.7	.8
			41.7	.8
			41.0	.7
			40.3	.7
			40.8	.6
	345		40.1	.6
			39.5	.5
			39.1	.4
			39.2	.3
(4(18.557	348.6		39.5	.3
			39.4	.3
	350		38.3	.2
			37.5	.2
			37.0	.1

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1930phae.proj..688A

	353		36.8	34.0
			37.9	.0
		101.1	37.0	.0
			36.3	33.9
			36.7	.9
			36.5	.8
			36.9	.8
	360		36.2	.7
			37.7	.7
			39.0	.7
4/28	362.1		39.1	.6
			37.2	.6
	363.6		36.3	.6
			36.3	.6
	364.5		36.2	.6
	365		35.7	.5
			35.0	.5
			35.2	.4
	367.5		35.3	.4
			36.0	.3
4/31	368.9		38.0	.3
			38.0	.3
	370.8		35.7	.2
	370.6		35.0	.2
			35.2	.2
4/32	371.1		35.7	.2
			35.6	.1
			34.6	.1
			33.9	.0
	375		34.0	.0
			34.0	.0

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1930phae.proj..6884

378	34.1	32.9
	33.7	.9
	33.3	.8
380	32.9	.8
	32.7	.7
	32.7	.7
	32.7	.7
	33.2	.6
	33.1	.5
	32.7	.4
	32.7	.4
	32.4	.3
390	31.2	.2

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1930phae.proj...68A

NP 4545 W445 H8 0.008

4028.348	6.2	99.7	22.7	21.6
	10			21.2
	20			20.5
	30			19.7
	40			19.1
	50			18.4
	51			18.2
	52		18.5	18.3
	53		19.9	18.2
	54		21.2	18.2
4045.827	54.2		21.2	18.1
	55		20.1	18.1
	56		18.6	18.1
	57		18.2	18.0
	58		18.0	18.0
	60			18.0
	70			17.6
4059.831	75.7		18.1	17.3
	80			17.0
	90	99.8		16.8
	99		16.6	16.5
	100		17.0	16.4
	101		19.0	16.3
4063.607	101.4		19.3	16.3
	102		18.8	16.3
	103		16.9	16.2
	104		16.9	16.2
	105		16.8	16.1
	106		16.7	16.1
			16.0	16.0
			15.9	16.0

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1930phae.proj..6884

	109		15.8	16.0
	110		16.2	15.9
			16.3	15.9
			16.3	15.9
			16.2	15.8
			15.8	15.8
	115		15.8	15.8
			15.8	15.8
			15.8	15.8
			16.1	15.7
			16.1	15.7
	120		16.2	15.7
			16.8	15.6
			17.7	15.6
4071.751	122.4		17.8	15.6
			17.5	15.5
			16.4	15.4
	125		16.1	15.4
			16.0	15.3
			16.0	15.3
			16.2	15.3
			15.8	15.3
	130	99.9	15.9	15.2
			16.0	15.2
			16.2	15.2
			16.0	15.2
			16.2	15.2
	135		16.9	15.1
			16.9	15.1
			17.9	15.1
4077.726	137.7		17.7	15.0

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1930phae.proj..688A

138		18.3 15.0
		17.0 15.0
140		16.3 15.0
		16.4 15.0
		16.8 15.0
		16.8 14.9
		16.9 14.9
145	150.0	16.9 14.9
		16.8 14.8
		17.0 14.8
		17.0 14.8
		17.2 14.8
150		17.5 14.8
150.4		17.7 14.8
151		17.6 14.7
		17.7 14.7
		18.3 14.7
		18.8 14.7
155		19.0 14.6
		19.1 14.6
		19.3 14.6
		19.5 14.5
		19.9 14.5
160		20.0 14.4
		19.6 14.4
		20.0 14.4
		21.0 14.3
		21.2 14.3
165		21.6 14.3
		21.7 14.2
		22.0 14.2

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1930phae.proj..688A

168	23.0	14.2
	23.2	14.2
170	23.9	14.2
	24.8	14.1
	25.3	14.1
	26.0	14.0
	26.7	14.0
175	27.4	14.0
	28.6	14.0
176.7	29.5	14.0
	29.5	13.9
177.5	29.4	13.9
	30.0	13.9
	31.8	13.9
180	33.0	13.9
	34.1	13.8
	95.4	13.8
182.5	35.7	13.8
	36.2	13.8
	38.3	13.8
185	39.9	13.8
	41.2	13.7
	42.8	13.7
	45.0	13.7
	47.8	13.6
190	49.9	13.6
191	52.8	13.6
191.5	53.9	13.5
192	54.5	13.5
192.5	55.4	13.5
193	57.5	13.5

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1930phae.proj..688A

	193.5	59.4	13.5
	194	61.9	13.4
	194.5	63.4	13.4
	195.0	65.0	13.4
	195.5	67.0	13.4
	196	68.2	13.3
	196.5	71.0	.3
	197	74.0	.3
	197.5	77.1	.3
	198	78.5	.3
4101.-	198.3	78.7	.3
	199	77.3	.2
	199.5	74.9	.2
	200	72.0	.2
	200.5	69.5	.2
	201	67.0	.2
	201.5	64.1	.2
	202	61.8	.2
	202.5	59.7	.1
	203	58.7	.1
	203.5	57.0	.1
	204	55.7	.1
	204.5	54.4	.1
	205	53.2	.1
	205.5	51.9	.1
	206	50.6	.1
	206.5	49.3	.0
	207	48.4	.0
		46.0	.0
		43.0	.0
	210	41.4	.0

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1930phae.proj..688A

211		40.3	13.0
		38.2	12.9
		36.4	.9
		34.8	.9
215		33.1	.8
		31.4	.8
		30.1	.8
		29.4	.8
		28.0	.7
220	101.1	26.7	.7
220.5		26.5	.7
221		26.3	.7
221.5		25.9	.7
222		25.9	.6
223		24.9	.6
223.5		24.2	.6
224		24.0	.6
225		22.9	.6
226		21.9	.5
227		21.0	.5
227.8		20.1	.4
228		20.2	.4
229		20.7	.3
230		20.0	.3
231		19.3	.3
231.4		19.3	.3
232		18.8	.2
		18.2	.2
		18.0	.2
235		17.8	.2
		17.4	.1

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1930phae.proj..686A

	237		12.3	12.1
			16.8	12.1
			16.8	12.1
	240	101.2	16.7	.0
			16.0	.0
			15.6	.0
			15.3	.0
			15.3	11.9
	245		15.1	.9
			14.8	.9
			14.7	.9
			14.7	.8
			14.0	.8
	250		14.1	.8
			13.9	.8
			13.7	.8
			13.2	.7
			13.5	.7
	255		13.1	.7
			13.5	.6
			13.3	.6
			12.8	.6
			12.7	.5
	260	101.3	12.8	.5
			12.6	.4
			12.5	.4
			12.9	.4
4(28	263.3		14.1	.3
			13.3	.3
	265		12.2	.3
			2.1	.2

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1930phae.proj..6884

	267		12.1	.2
			12.0	.2
			12.3	.2
4131	270		13.9	.1
			12.2	.1
			11.9	.1
4132	272.6		12.2	.0
			12.1	.0
			11.7	.0
			11.5	.0
			11.3	.0
			11.3	10.9
			11.5	.9
			11.6	.9
	280	12.4	10.9	.8
			10.9	.8
			10.9	.8
			10.6	.8
			10.8	.7
	285		10.9	.7
			10.5	.7
			10.9	.6
			10.8	.6
			10.2	.5
	290		10.0	.5
	295			10.3
	300			10.2

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1930phae.proj..6804

μ Ø 4547 W445 γ2 δ 0.008

4128	48.7		
4131	55.9		
	80	100.0	53.5 53.9
			54.0 .8
			54.0 .8
			53.9 .7
			53.1 .6
	~~80~~		54.0 .5
	85		54.7 .4
4143. 880	85.9		54.7 .4
			54.7 .3
			54.0 .3
			53.1 .2
			54.0 .2
4146	89.6		54.1 .2
	90		54.0 .1
			53.4 .0
			52.8 .0
			52.6 52.9
			52.8 .8
	95		53.3 .8
			53.1 .7
			.2 .6
			.7 .6
			.3 .5
	100		52.7 .4
			.4 .3
			.3 .2
			53.0 .2
			.4 .1
	105		.0 .0

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1930phae.proj..688A

	106	52.3	52.0
		.3	51.9
		51.9	.8
		.9	.8
	110	.1	.8
		.7	.7
		52.9	.6
(4154.507	112.4	53.2	.6
		52.9	.6
		52.0	.5
	115	51.7	.4
		50.9	.3
		50.9	.2
		51.0	.1
		51.2	.0
	120	51.7	.0
		51.9	50.9
		51.9	.9
		51.8	.8
		51.4	.8
	125	50.9	.7
		50.9	.7
		50.9	.6
		50.8	.5
		50.6	.4
	130	50.1	.3
		50.3	.2
		50.2	.1
4163.658	132.9	51.8	.0
		51.8	.0
		51.2	.0

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1930phae.proj..688A

	135	50.5	49.9
		49.7	.9
		50.0	.8
		50.2	.8
		50.2	.7
	140	49.9	.7
		50.1	.6
		50.2	.5
		50.0	.4
		49.9	.3
	145	49.0	.2
		48.7	.1
		49.1	.0
		49.4	.0
		49.0	.0
	150	48.2	48.9
		49.0	.8
		50.9	.8
(4171.909	152.1	50.9	.8
		49.5	.7
	153.8	48.8	.6
		48.9	.6
	155	51.1	.5
(4173	155.6	51.8	.5
		51.5	.4
		49.6	.3
		48.7	.2
		49.0	.1
	160	49.3	.1
		48.7	.0
		48.5	.0

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1930phae.proj..688A

	163	47.9	48.0 ~~49.9~~
		48.2	47.8
(4172	165	48.8	.8
		48.6	.8
	166.2	48.6	.7
		50.0	.7
4178.863	167.7	51.2	.6
		51.1	.6
		49.2	.6
	170	47.8	.5
	171	47.3	.5
	180		46.8
	185	46.3	46.3
		47.4	.2
		48.2	.1
< 4188	187.1	48.2	.1
		47.8	.1
		46.4	.0
	190	45.8	.0
		45.2	45.9
		45.3	.9
		46.2	.8
4192	194	46.7	.8
		46.3	.7
	195.7	45.9	.7
	200		45.4
	205		45.0
	210	44.1	44.7
		44.8	.6
		46.0	.5
(4198	212.2	46.1	.4

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1930phae.proj..688A

	213	45.7 .3
4199.107	213.7	45.8 .3
		45.5 .3
	215	44.3 44.2
		44.4 .1
		44.4 .0
		44.9 .0
		45.0 43.9
	219.3	45.0 .9
	220	46.0 .9
4202.042	22.2	46.2 .8
		45.4 .8
		44.8 .7
		44.1 .6
		44.0 .6
	225	44.0 .5
		43.5 .4
		44.0 .3
		44.1 .2
		44.8 .2
4206	229.1	44.8 .2
	230	43.2 .1
		43.1 .0
		43.2 .0
		43.1 42.9
		42.8 .9
	235	43.2 .8
	240	42.4
	245	42.1
	248	41.9 41.9
		42.3 41.8

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	250	43.7	41.8
4215.545	250.2	43.9	.8
		43.4	.7
		41.9	.7
		41.3	.6
		41.5	.6
	255	41.5	.5
		41.9	.4
		42.1	.3
		41.4	.3
		42.2	.2
(4219	259.7	42.7	.1
	260	42.6	.1
	261	41.9	.0
		41.6	.0
		41.1	40.9
		41.1	.9
	265	41.1	.8
		41.1	.8
		40.9	.7
(4218	268	42.5	.7
		41.5	.6
	270	41.3	.5
	270.5	41.3	.4
		40.8	.4
		40.0	.3
		39.9	.3
		41.7	.2
(4222	274.7	42.7	.2
	275	42.4	.1
		41.3	.1
		40.8	.0

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	278	40.3	.0
		39.9	39.9
	280	39.9	.8
		39.6	.8
		39.9	.7
		39.5	.6
		39.1	.6
	285	39.6	.5
		39.9	.4
		40.3	.3
		43.8	.2
4233.171	288.6	45.4	.2
		44.5	.1
	290	40.0	.1
	290.6	39.0	.0
		39.0	.0
		39.2	.0
		39.2	38.9
		40.1	.9
4235.951	294.4	40.2	.8
	295	39.7	.8
	296	38.7	38.7
deficit	300		38.4
	305		38.0
	310		37.7
	315		37.4
	316	37.1	37.2
		38.0	37.2
4246.838	317.8	38.6	37.1
		38.5	37.1
		37.7	37.1

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	320	37.0	37.0
	325		36.7
	330		36.3
	331	36.7	36.2
	332	36.3	36.1
	333	37.4	36.1
4254	3334	37.6	36.0
	334	37.3	36.0
	335	96.6	35.9
		36.8	35.9
		36.0	.8
		35.3	.8
		35.1	.7
	340	35.7	.7
		36.0	.6
		36.0	.5
		35.3	.4
		36.0	.3
	345	36.8	.2
4260.488	3426	37.1	.2
		37.0	.1
		36.7	.1
		36.6	.0
		36.5	.0
	350	36.2	.0
	355		34.7
	360		34.2
	361	44.0	.1
		44.3	.0
		45.1	.0
4269	3623	45.3	.0

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1930phae.proj..68A

	364	35.1	.0
	365	34.7	33.9
		34.4	.9
		35.0	.8
		36.2	.8
(4271	368.4	36.8	.7
		36.4	.7
		34.3	.6
		33.3	.5
		34.1	.4
4278	372.3	34.2	.4
		34.0	.3
		34.2	.2
		34.5	.2
4275	375.4	34.8	.1
		34.7	.1
		33.7	.0
		33.1	.0
	379	33.0	32.9

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1930phae.proj..688A

60 μφ 4549 W445 δ 0.005

	8.8	101.8	45.7 45.7
	9.0		46.8 .7
(4284.22	9.2		46.9 .7
	10		46.1 .7
			45.7 .6
			45.6 .6
			46.2 .5
			46.0 .4
	15		45.6 .4
			45.9 .3
			46.6 .3
4288	17.2		46.6 .3
			44.9 .3
			44.8 .3
	19.5		45.3 .3
	20		46.9 .2
	20.5		47.2 .2
			47.9 .2
4290	21.6		49.2 .2
			48.3 .1
			45.0 .1
			44.7 .1
	25		45.0 .1
			44.9 .0
			43.8 .0
			44.1 .0
			47.3 .0
(4294.10	29.5		48.1 .0
			47.9 .0
	30.7		45.5 .0
			45.2 .0

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1930phae.proj..688A

	32	45.1	44.9
		45.5	.9
		45.9	.9
4296.60	34.3	46.1	.9
		45.1	.8
		44.2	.8
		44.7	.8
		44.7	.8
		44.4	.7
	40	47.7	.7
		50.0	.7
4300.05	41.2	50.1	.7
		42.0	.7
	42.5	46.0	.6
		45.6	.6
		45.0	.6
4302	45	46.4	.6
		45.9	.5
		48.4	.5
4303.20	47.3	48.7	.5
		46.4	.5
	48.7	44.8	.5
		44.9	.4
		45.0	.4
		45.1	.4
		45.0	.3
		45.0	.3
	54.5	45.7	.3
	55	45.8	.3
		48.4	.2
4307.87	56.7	49.5	.2

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		47.8	
	57	~~45.8~~	44.2
	58	45.3	.1
	58.3	45.1	.1
		45.7	.1
4309	59.4	46.2	.1
		45.6	.0
		44.9	.0
		45.2	.0
		45.7	43.9
		45.5	.9
		46.3	.9
4312.86	65.9	47.8	.9
		47.7	.9
		45.9	.8
		46.6	.8
		48.0	.8
	69.3	47.9	.8
		48.3	.8
4315.02	70.3	48.4	.7
		47.0	.7
	71.7	45.8	.7
		46.1	.7
		47.2	.6
		47.8	.6
	75	47.4	.6
		47.3	.6
		47.2	.5
		47.5	.5
		47.7	.5
	80	48.1	.4
		49.0	.4

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1930phae.proj..688A

4321	81.3 ~~82~~	49.2 .4
		48.9 .4
		49.9 .3
		49.7 .3
	83.1	49.1 .3
		51.4 .3
	86.2	51.7 .3
		50.9 .2
		52.1 .2
		53.8 .2
	89.3	53.8 .2
		56.4 .2
(4325.77	90.3	56.9 .2
		55.6 .1
		54.3 .1
		54.7 .1
		55.0 .1
	95	56.3 .0
		57.2 .0
		58.0 .0
		58.7 .0
	98.8	59.9 42.9
		59.8 .9
	100	~~62.5~~ ~~60.0~~
		~~63.6~~
		~~63.6~~
		64.9
	102.5	65.5
		65.7
		67.0
	100	60.0 .9
		62.5 .8

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1930phae.proj..688A

	102	63.6	2.8
	102.5	63.7	.8
		64.8	.8
	103.5	65.6	.8
		65.7	.8
	104.5	67.0	.8
	105	67.1	.7
		69.8	.7
	106.4	70.1	.7
		69.8	.7
	107.4	69.6	.7
		70.9	.6
		74.3	.6
	110	75.3	.6
	110.5	75.6	.5
		76.4	.5
		80.0	.5
4337.94	112.3	80.4	.5
		80.9	.4
		82.0	.4
	115	84.4	.4
	115.5	85.8	.4
	116	86.8	.3
	116.5	88.1	.3
	117	89.0	.3
	117.5	91.3	.3
	118	93.3	.3
4340.118	118.3	94.0	.3
	119	91.5	.3
	119.5	89.8	.2
	120	88.7	.2

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1930phae.proj..688A

	120.5	88.4	.2
	121	87.2	.1
	121.5	85.6	.1
	122	83.8	.1
	122.5	82.0	.1
	123	80.5	.1
4344.32	123.9	81.4	.1
	124	81.3	.1
		78.5	.0
		76.2	.0
		74.1	.0
	127.5	74.1	.0
		73.5	.0
		71.5	.0
	129.5	69.7	41.9
	130	69.7	.9
		69.2	.9
		67.3	.9
		65.2	.9
		64.7	.9
	134.7	63.3	.8
	135.3	63.6	.8
		62.2	.8
		61.0	.8
		60.0	.8
		58.8	.8
(4351.81	140	60.9	.7
		58.6	.7
		55.9	.7
		55.6	.6
		53.8	.6

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	145	53.9	.6
		52.9	.5
		51.3	.5
		50.9	.5
		50.9	.4
	150	49.2	.4
		48.4	.3
		48.3	.3
	152.4	48.6	.3
		47.4	.3
		47.4	.2
		46.7	.2
		46.8	.2
		46.2	.2
		45.5	.1
		45.5	.1
	159.6	46.3	.1
		46.0	.1
		44.8	.0
		44.4	.0
		44.5	.0
		44.2	.0
		44.3	40.9
		44.1	.9
		43.9	.9
		43.2	.9
		43.3	.8
(4367	169.9	43.9	.8
	170	43.8	.8
		42.4	.8
		43.0	.8

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1930phae.proj..688A

4369	172.4	43.3 .8
	173	43.0 .8
		41.9 .7
		42.4 .7
		42.8 .7
	176.2	43.1 .7
		41.3 .7
		41.9 .7
		41.2 .6
		42.0 .6
		42.4 .5
		43.2 .5
(4374	182.1	43.3 .5
		42.1 .5
	183.3	42.1 .4
		41.0 .4
		40.9 .4
		40.7 .4
		41.6 .3
4398	187.4	41.6 .3
		41.5 .3
		40.3 .3
	190	40.3 .2
		40.2 .2
		40.2 .2
		40.0 .1
		40.0 .1
	195	40.2 .1
		40.9 .0
	196.3	40.9 .0
		42.9 .0

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(4383	197.7	44.0	.0
	198	43.9	.0
		41.8	39.9
	199.7	41.3	.9
	200	41.6	.9
(4385.41	200.9	42.9	.9
		42.8	.9
		41.0	.8
	202.6	39.8	.8
		39.8	.8
		40.4	.8
	204.4	40.9	.8
		40.6	.8
		40.1	.8
		39.7	.8
		40.5	.8
		40.8	.8
4391	209.8	41.6	.7
		40.4	.7
		39.9	.7
		40.3	.7
		39.8	.7
		40.0	.6
		40.8	.6
		40.9	.6
		43.9	.5
	218.1	43.9	.5
		41.4	.5
	219.3	40.4	.4
		40.7	.4
		39.4	.4

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	222	40.0	.3
		39.0	.3
		38.9	.3
		39.3	.3
		41.0	.2
4399.76	226.4	41.8	.2
		41.0	.2
		39.1	.2
		38.6	.1
	230	39.3	.1
		38.8	.1
		39.9	.0
		39.8	.0
		39.0	.0
		41.7	.0
4404.19	235.3	41.9	38.9
		40.9	.9
		39.7	.9
		38.0	.9
		38.9	.8
		39.4	.8
	240.5	40.4	.8
		40.0	.7
		39.0	.7
		40.0	.7
		39.0	.7
		38.7	.6
		39.9	.6
4411	246.3	40.0	.6
		39.1	.6
		38.9	.5

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	249	37.8	38.5
	250	38.0	.5
		39.1	.4
		38.7	.4
	252.4	38.7	.4
		40.3	.3
(4415	253.4	40.9	.3
		40.0	.3
	254.5	39.6	.3
		39.8	.2
		40.7	.2
4416.84	256.6	41.2	.2
		40.9	.2
	257.6	40.2	.2
(4417.71	258.3	40.9	.2
		39.7	.1
	259.8	37.5	.1
	265		37.9
	270		37.8
	defect 275		37.7
	280		37.6
	285		37.3
4434.?	287.2		
	290		36.9
	295		36.6
	300		36.3
	301	36.2	36.2
		36.1	36.1
		38.5	.1
(4443.81	303.5	39.8	.1
		38.6	.0

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	305	36.3	36.0
		35.9	35.9
		35.5	.9
		36.2	.8
	308.3	36.8	.8
		36.3	.8
4404.	310	36.6	.7
		35.3	.6
		35.4	.5
		35.6	.4
		35.6	.4
	315	37.0	.3
4450.49	315.1	37.1	.3
		36.0	.2
		34.8	.1
	317.3	34.4	.0
		35.0	.0
		34.9	34.9
	320	34.9	.8
		34.7	.7
	324.7	35.4	.7
4455	322.6	35.4	.6
		35.0	.6
		34.1	.5
		34.9	.4
		34.9	.3
		34.3	.2
		34.2	.1
		34.4	.0
	330	34.1	33.9
	335		33.6

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	340		33.0
	341	33.4	33.0
		32.9	32.9
		33.3	.8
		35.8	.8
4468.49	344.2	36.6	.7
		35.0	.7
4469.27	345.2	34.9	.6
		33.3	.5
	346.6	32.7	.5
		32.9	.4
		33.3	.3
4471	348.8	34.0	.3
	349.4	33.8	.2
	350	34.2	.1
4472.91	350.3	34.4	.1
		33.0	.0
		32.2	.0
		32.4	31.9
		32.0	.8
		31.5	.7
		32.0	.6
		32.4	.5
		32.5	.4
		32.2	.3
	360	31.4	.2
		31.8	.1
		30.6	.0
		31.7	30.9
	363.5	35.0	.9
	364	40.0	.9

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1930phae.proj..6884

4481.25	264.8 265	49.2	.8
	265	48.0	.8
	265.5	42.0	.8
	266	35.0	.7
	266.5	31.5	.7
	267	31.1	.6
	268	31.1	.5
	269	30.8	.4
	270	30.0	.3
	275		29.9
	276	30.0	29.9
4488	276.5	30.7	.9
4491	277	31.0	.8
c4491	278	31.6	.8
		29.9	.7
		29.8	.7
	280.3	29.8	.6
		31.3	.5
4501.79	281.4	31.6	.4
		30.7	.4
	282.6	29.4	.3
	285		.0
	290		28.6
	295		28.1
	295.6	28.1	28.1
	296	28.6	28.0
		30.3	28.0
4508.29	297.1	30.4	28.0
		28.8	27.9
	298.7	28.0	.8
	299	28.1	.8

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74 N 4548 W 445 H 8 0.005

	30	98.8	16.6 16.5
			16.7 16.5
			17.3 .4
			18.0 .4
Γ4290	38.7		18.4 .4
			18.2 .4
			16.8 .4
			16.2 .3
			16.4 .3
			16.2 .3
			15.9 .3
	40		16.3 .3
			17.7 .2
Γ4294.10	41.5		18.1 .2
			17.8 .2
			16.6 .2
			16.2 .2
			16.3 .2
			16.8 .1
4296.66	46.8		16.9 .1
			16.5 .1
			16.3 .1
			16.3 .1
	50		16.4 .1
			16.8 .0
			17.0 .0
			18.2 .0
? 4300.05	53.4		18.7 .0
			18.0 .0
			16.7 .0
			16.6 .0

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1930phae.proj..688A

	57	17.0	.0
		17.4	15.9
		17.1	.9
		16.1	.9
		16.0	.9
		15.9	.9
		16.0	.8
		16.2	.8
		16.3	.8
		16.8	.8
		18.1	.8
4307.87	68.4	18.7	.8
		18.0	.8
		16.3	.7
		16.1	.7
		16.1	.7
		16.1	.7
		16.0	.7
		16.0	.6
		16.3	.6
		16.7	.6
		17.3	.6
4312.86	78.3	17.6	.6
		17.4	.5
		17.6	.5
		18.5	.5
4315.02	81.7	19.0	.5
		18.9	.5
		18.0	.4
		16.8	.4
		16.8	.4

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	86		17.1 15.4
			17.0 .3
			17.1 .3
			17.7 .3
			18.0 .3
			17.9 .2
			18.0 .2
			19.0 .2
			19.0 .2
			18.8 .2
			18.9 .1
			19.4 .1
			20.2 .1
			20.7 .1
	100		20.9 .1
			21.7 .0
			22.9 .0
(4325.77)	102.5		23.5 .0
			23.4 .0
			23.0 .0
			23.0 .0
			23.3 .0
			23.8 14.9
			24.4 .9
			25.1 .9
	110	99.7	26.5 .9
	110.6		27.3 .9
			27.3 .9
			28.0 .8
			29.4 .8
			30.5 .8

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	115	31.4 14.8
		33.0 .8
		34.8 .8
	117.7	36.2 .8
		36.6 .8
		36.9 .7
	120	40.0 .7
		42.0 .7
		44.6 .7
		47.4 .7
		50.0 .7
	125	52.9 .6
	125.5	55.3 .6
	126	57.0 .6
	126.5	58.8 .6
	127	60.2 .6
	127.5	61.9 .6
	128	63.8 .6
	128.5	66.1 .6
	129	68.9 .5
	129.5	72.6 .5
	130	76.5 .5
F 340.	130.7	78.7 .5
	131	78.2 .5
	131.5	75.4 .5
	132	70.4 .5
	132.5	67.5 .5
	133	65.6 .4
	133.5	63.0 .4
	134	60.9 .4
	134.5	58.9 .4

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	135	56.9 .3
	135.5	55.6 .3
	136	54.4 .3
	136.5	52.5 .3
	137	50.8 .3
	137.5	49.4 .3
	138	47.7 .3
	138.5	45.1 .3
	139	44.2 .3
	140	41.5 .2
		39.4 .2
		37.0 .2
		35.4 .2
		34.0 .2
	145	32.5 .1
	145.8	31.2 .1
	146	31.2 .1
		30.3 .1
		28.8 .1
		27.8 .1
	150	27.0 .1
	150.7	26.9 .0
		27.0 .0
(4351.81	152	28.1 .0
		25.8 .0
		23.9 .0
	155	22.3 .0
		21.8 .0
		21.5 .0
		20.7 13.9
		20.2 .9

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	160		19.5 13.9
			19.2 .9
			18.8 .9
			18.2 .9
			18.3 .8
			17.7 .8
	165.5		17.4 .8
			17.6 .8
	166.8		17.7 .8
	168		17.1 .8
			16.7 .8
	170		16.7 .7
			16.2 .7
			16.0 .7
			15.9 .7
			15.7 .7
			15.2 .6
			15.3 .6
			15.2 .6
			15.1 .6
			15.0 .6
	180	99.6	14.9 .6
			15.1 .5
(F367	18.8		15.5 .5
			15.4 .5
			14.7 .5
			14.5 .5
			14.6 .5
			14.6 .5
defect	- - - — — —		15.2

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	191	14.5	13.3
		14.0	.3
		14.1	.3
		14.0	.3
	195	13.9	.3
		13.7	.3
		13.9	.3
		13.7	.2
		13.0	.2
	200	99.5	13.2 .2
		13.3	.2
		13.2	.2
		13.3	.2
		13.3	.1
		13.0	.1
		13.1	.1
		13.0	.1
		13.3	.1
		14.9	.1
4383	209.6	15.4	.0
		15.2	.0
		14.3	.0
		14.2	.0
(4385.41	213	14.3	.0
		13.5	.0
		13.2	.0
		13.3	.0
		13.0	12.9
		13.0	.9
		12.9	.9
	220	13.0	.9

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	225	12.9
	230	12.7
4395.05	230.7	
	235	12.6
4399.76	238.9	
	240	12.5
	245	12.4
4404.79	247.4 ~~250~~	
	250	12.3
	255	12.2
	260	12.1
	265	12.0
4416.84	269.6	11.8
	275	11.7
	280	11.6
	285	11.5
	290	11.4
	295	11.3
	300	11.2
	305	11.0 ~~11.0~~
	310	10.8
	315	10.6
4443.81	315.8	
	320	10.4
	325	10.2
	330	10.0
	335	9.9
	340	9.7
	345	9.6
	350	9.4
	355	9.2

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	~~356.9~~		a
4468-69	~~360~~		9.1
	360		8.9
	365		8.8
	370	8.7	8.7
	374	9.1	8.7
	375	12.1	.7
	376	15.0	.7
	376.5	16.4	.6
	377	16.5	.6
4481.25	377.3	13.0	.5
	378	9.9	.5
	379	8.5	8.5
	380		

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λ 3920

X	u_0	u	u/u_0	log T	$u_0 u$	u/u_0	log T	$u_0 u$	u/u_0	log T	$u_0 u$	u/u_0	log T
~~0.5~~ 5	–												
10	–												
15	13.7	(2.7)											
20	13.7	6.7											
25	13.7	9.5											
30	13.6	11.9											
35	13.6	14.4											
40	13.6	17.6											
45	13.6	22.6											
50	13.5	24.8											
55	13.5	27.3											
60	13.5	29.8											
65	13.5	34.9											
70	13.4	38.0											
75	13.4	42.7											
80	13.4	48.3											
85	13.3	60.0											
90													
95													
100													

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W445

	λ3920				λ4030				λ4210				λ4450			
H	u_0	H	u/u_0	-logT	u_0	u/u_0	H	-logT	u_0	u/u_0	H	logT	u_0	u/u_0	H	logT
5		–			105.9	0.047	13.0	.240	104.3		28.4		102.8	1.	39.8	
10		–				0.094	20.6	.381			35.0				47.2	
	103.7	(2.7)	.145	(0.05)	105.8	.142	25.1	.46	104.2		40.0		102.7		52.2	
20		6.7	.193	0.13		.189	29.0	.54	104.1		43.8				55.4	
		9.6	.241	0.18		.236	32.1	.59			47.0				58.5	
30		11.9	.289	0.23		.284	35.0	.65	104.0		50.0				60.9	
		14.4	.337	0.29		.331	37.8	.70			53.0				63.6	
40		16.5	.386	0.31		.378	40.2	.74			55.1				66.3	
		18.5	.434	0.35	105.7	.426	42.5	.78	103.9		57.6				68.3	
50	103.6	20.7	.482	0.39		.473	45.2	.84			59.5				71.0	
		22.7	.530	0.43		.520	47.7	.88			61.6				73.8	
60		24.8	.579	0.47		.568	50.1	.93	103.8	.578	63.9				76.0	
		29.3	.628	0.52		.615	52.8	.98		.626	67.0				78.2	
70		28.8	.676	0.55		.662	55.2	1.02		.674	69.9		102.6		81.0	
	103.5	32.1	.724	0.61		.710	57.7	1.07	103.7		72.7				84.6	
80		34.9	.773	0.66		.757	60.9	1.13			76.3				88.9	
	103.4	38.0	.822	0.72		.804	64.7	1.20			80.4				93.2	
90		42.6	.870	0.80		.851	68.7	1.27	103.6		85.7				–	
		48.2	.928	0.91		.898	74.8	1.38			93.0				–	
100	1	60.0	.967	1.13		.946	86.0	1.59			–				–	
H_0		101.8				101.9			1		100.7				100.6	

h''_a 7.44 half-mms

h''_b 3.68 mms

logT: $-0.0^{197}_{189}H$ $-0.0^{184}_{185}H$

Slit width equivalent to 0.268 in log

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M 04564 W459 K-He 0.003

	10	102.1	70.7	70.7
			71.0	.5
			70.7	.3
			70.1	.1
			71.2	69.9
3930.310	16		71.9	.7
			71.0	.5
			69.9	.3
			69.2	.1
	20	102.2	69.7	68.9
	20.5		69.8	.9
	21		70.1	.8
			70.4	.8
			70.7	.7
			71.1	.7
			71.7	.6
			72.3	.5
			73.8	.4
			75.4	.3
	25		80.0	.2
	25.5		86.0	.1
	26		91.0	.0
	26.6		93.7	.0
			91.6	67.9
			87.7	.8
			82.5	.7
			78.4	.6
		102.3	74.8	.5
			72.6	.4
	30		70.6	.3
	30.5		69.5	.2
	31		68.7	.1

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	32		67.8	67.0
			67.7	66.8
			67.0	.7
		102.4	66.7	.5
			66.0	.3
			65.9	.0
			65.9	65.9
			65.2	.8
	40		66.0	.7
			66.8	.4
3938.411	41.3		66.9	.3
		102.5	66.7	.2
			66.0	.1
	43.3		65.9	.0
defect <	48	102.7	64.3	64.4
			64.3	.2
	50		64.0	.0
			63.7	63.8
			64.0	.6
			64.5	.4
			64.1	.2
			64.0	.1
		103.2		.0
	56.2		63.1	62.9
			65.6	.8
			65.1	.6
	58.6		65.8	.5
		102.8	64.2 = 65.6	.4
	60		64.0	.3
			63.0	.1
			62.7	.4

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	63		62.3	64.8
			62.6	.6
			62.7	.4
			62.2	.2
			62.9	.0
			63.0	60.9
			63.8	.7
3949	70		102.9 63.9	.5
			63.7	.3
			62.4	.1
			62.7	.0
			62.7	59.9
			62.0	.8
			62.7	.6
			62.9	.4
			62.8	.2
			62.6	.0
	80		103.0 63.0	58.9
			63.7	.7
			63.6	.5
			63.1	.3
			63.3	.2
			63.5	.0
			63.0	57.9
			63.8	.7
			63.5	.5
			63.8	.3
	90		103.1 64.0	.2
			64.6	.0
			65.0	56.8
			64.7	.7

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	94	65.1	56.5
		65.7	.3
		65.8	.1
		66.0	55.9
3956?	98	67.0	.7
		67.2	.6
	100	103.2 67.8	.4
		68.2	.2
		68.8	.1
		69.6	54.9
		69.3	.7
		70.1	.6
		70.3	.4
		71.8	.3
		103.3 71.9	.1
	109	73.6	53.9
	109.5	73.8	.8
	110	74.7	.7
	110.5	76.3	.6
	111	77.7	.5
3961.537	111.3	77.8	.4
	112	77.6	.3
	112.8	76.9	.2
	114	77.2	.1
		103.4 77.8	52.9
		78.6	.7
		80.2	.6
	~~117.3~~	~~80.5~~	~~.5~~
	117.3	80.6	.5
	~~119.3~~	80.2	.4
		81.9	.2

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	120	103.5	83.2	.0
			84.2	.8
			84.6	57.7
			86.1	.6
			87.0	.4
	125	103.6	88.5	.2
	125.5		89.5	.1
	126		898	.0
	126.5		90.0	50.9
	127		90.8	.8
	127.5		91.7	.7
	128		92.4	.6
	128.5		92.9	.5
	129		93.3	.4
	129.5		94.5	.3
	130	103.7	95.1	.2
	130.5		96.2	.2
	131		97.7	.1
	131.5		98.3	.0
	132		100	.0
3968.	132.4		100.6	48.9
	133		100.0	.8
	133.5		99.3	.8
	134		99.1	.7
	134.5		99.6	.6
	135		100.2	.5
	135.5		100.8	.4
3970	136		100.9	.3
	136.5		100.8	.2
	137		101.0	.1
	137.5		101.0 ~~101.0~~	.0
	138	103.8	100.6	.0

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138.5		99.3	48.9
139		98.8	.8
139.5		97.6	.7
140		97.5	.6
140.5		97.5	.6
141		96.7	.5
141.5		95.7	.4
142		95.3	.3
142.5		94.9	.2
143		93.8	.1
143.5		92.9	.1
144		92.5	.0
144.5		92.1	47.9
145		91.8	.8
146		90.8	.7
		89.0	.5
	103.9	87.0	.3
		85.3	.1
150		84.0	46.9
		82.9	.8
		81.2	.7
152.4		81.3	.6
		80.2	.5
		78.1	.3
155		76.7	.1
		75.7	.0
		74.6	45.8
		73.0	.6
158.7		71.8	.5
159.2		71.8	.4
160	104.0	70.2	.2

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161		69.0	.0
162.1		66.2	44.9
162.8		66.3	.8
164		65.0	.6
165		63.7	.4
		61.8	.3
166.5		61.2	.2
167.1		61.2	.0
168		59.8	43.9
169		59.7	.7
170		58.5	.6
171		57.5	.4
171.5		57.5	.3
172	104.1	57.0	.2
		55.9	.0
		54.3	42.9
175		53.7	.7
		53.3	.6
		52.7	.4
		51.9	.2
		50.7	.0
180	104.2	50.0	41.9
		49.0	.8
181.8		48.4	.7
182.7		48.8	.6
184		48.0	.3
185		47.4	.1
		47.6	40.9
		47.0	.7
		45.7	.5
	104.3	45.6	.3

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190			44.8	.2
			44.4	.0
192			43.7	39.9
defect				
197			42.3	39.0
197.6			42.6	38.9
198		104.4	42.2	.8
			41.1	.7
200			41.1	.5
			40.7	.3
			40.1	.1
			39.7	.0
			39.8	37.8
205		104.5	39.2	.7
			38.9	.5
			38.9	.3
			38.3	.1
			38.2	.0
210		104.6	37.9	36.8
			37.6	.7
			37.0	.5
			37.0	.3
			37.0	.2
215			37.2	.0
		104.7	37.4	35.9
			36.9	.7
			36.8	.5
			36.3	.3
220			36.0	.1
			36.0	.0
			35.8	34.9
			34.9	.7

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	224		34.8	34.6
		104.8	34.9	.4
			34.8	.2
			34.8	.0
			34.2	33.9
			33.6	.7
	230		33.4	.5
			33.8	.3
			84.0	.2
			33.2	.0
			33.2	32.8
	235	104.9	32.1	.6
			32.3	.5
			32.3	.3
			32.9	.2
			33.7	.0
400s.	239.3		33.8	.0
			33.3	31.9
			31.9	.7
			31.4	.5
			31.7	.3
			31.1	.2
	245		31.2	.0
		105.0	31.6	30.8
			30.9	.7
			30.8	.6
			30.5	.4
	250		31.0	.3
			31.0	.2
			30.8	.1
			30.0	.0

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	254		29.2	29.9
	255		29.7	.7
			29.8	.6
			29.8	.5
			29.7	.3
			30.4	.2
4012.	259.6		30.6	.1
		105.1	30.5	.1
			29.3	.0
			28.5	28.8
	263		29.1	.7
	349	106.0	20.7	20.7
	350		20.9	.6
	350.5		23.8	.6
4045.	351.1		24.8	.4
	351.5		24.0	.4
	352		22.3	.3
	352.5		20.9	.3
	353		20.5	.3

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μ Ø 4563 W459 K-He Repeated twice without improving
Ø.005

	22	1020	39.4	39.8
			40.1	.6
			40.7	.4
3928	24.1		40.7	.3
			40.0	.2
			39.2	.1
			39.6	38.9
			39.8	.7
			39.1	.6
			38.9	.4
			39.2	.3
3930.310	21.9		39.7	.1
	23		38.9	37.9
			37.2	.7
			36.9	.6
		1021	37.1	.4
3932.	25.3		37.3	.3
			38.4	.2
			38.8	.0
	29		40.0	36.9
	29.5		41.6	.8
	30		44.1	.7
	30.5		49.2	.6
	31		55.2	.5
	31.5		62.5	.4
	32.		69.0	.3
3933.	32.3		69.7	.2
	33.0		65.9	.1
	33.5		62.0	.1
	34		55.1	.0
	34.5		49.7	35.9

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1930phae.proj..688A

	35	102.2	44.9	.8
	35.5		41.2	.7
	36		39.4	.6
	36.5		38.0	.6
	37		37.4	.5
	37.5		36.9	.4
	38		36.7	.3
	39		36.4	.2
	40		35.9	.0
			34.9	34.8
			34.5	.7
			34.3	.5
			34.2	.3
	45	102.3	34.2	.1
			34.7	33.9
			34.8	.8
3938.	47.2		34.9	.7
	48		34.7	.6
			34.0	.4
	50		33.6	.3
			33.2	.2
			33.1	.0
			32.9	32.0
			32.8	32.9
		102.4	32.6	.8
			32.4	.7
			32.5	.6
			32.6	.5
	59		32.6	.4
defect	68	102.5	32.0	31.3
	69		31.9	.2

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1930phae.proj..688

	70		31.7	31.1
			31.4	.0
			31.4	30.9
			31.7	.8
		102.6	32.0	.9
3949?	75		32.3	.5
	76		32.2	.4
			31.8	.3
			31.8	.2
			32.0	.1
	80		31.8	.0
			31.7	29.9
		102.7	31.7	.8
			31.8	.7
			31.8	.6
	85		31.7	.5
			31.7	.4
			31.6	.3
			31.7	.2
		102.8	32.0	.0
	90		32.3	28.9
			32.6	.8
			32.7	.7
			32.8	.6
			32.8	.5
	95		33.0	.4
			33.3	.3
			33.6	.2
			33.8	.0
			34.0	
			34.0	27.9
	100	102.9	34.3	27.8

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1930phae.proj..688A

	101		34.6	.7
			35.2	.6
3956	103.1		35.8	.5
			35.7	.4
	105		36.2	.3
defect				
	113		40.6	26.4
			41.2	.3
		103.0	42.7	.2
			44.3	.1
			46.1	.0
3961.	117.5		46.3	25.9
			46.2	.8
			45.8	.7
	120		46.2	.6
			47.2	.5
			48.2	.4
			49.7	.3
			50.8	.2
	125		52.0	.1
			53.7	.0
	126.7		55.0	24.9
	127		55.5	.8
			56.9	.7
			58.1	.6
	130		58.9	.5
			61.8	.4
			64.3	.3
		103.1	67.1	.2
	134		69.9	.1
	134.5		71.0	.0
	135		72.1	23.8

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1930phae.proj..688A

	135.5		73.7	.8
	~~136~~		74.8	.8
	136		78.3	.7
	136.5		83.0	.7
	137		85.5	.6
	137.5		87.0	.6
3968.	138.2		86.5	.5
	~~138.8~~		86.2	.5
	139.3		86.8	.4
	140		88.1	.4
	140.5		89.5	.3
	141		91.0	.2
	141.5	103.2	92.1	.1
	142		92.3	.1
3970.	142.4		92.0	.0
	143		90.5	.0
	143.5		88.6	22.9
	144		86.6	.9
	144.5		84.4	.8
	145		82.4	.7
	145.5		80.7	.7
	146		77.3	.6
	147		74.0	.5
	148		71.3	.4
	149	~~103.3~~	68.8	.3
	150		66.8	.2
			64.0	.1
			61.7	.0
			59.3	21.8
	155	103.3	57.2	.7
			55.4	.6

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1930phae.proj..6884

157		53.8	.5
		51.9	.4
		49.9	.3
160		48.1	.2
		46.5	.1
		~~46.8~~ 44.8	.0
		43.3	20.8
	103.4	41.7	.7
165		40.0	.6
		38.8	.5
		37.7	.4
		36.1	.3
		35.0	.2
170		34.0	.1
		32.9	.0
		32.2	19.8
		31.3	.7
		30.0	.6
175	103.5	29.0	.5
		28.8	.4
		28.3	.3
		27.6	.2
		26.8	.0
180	103.6	25.9	18.9
		25.3	.8
		24.8	.7
		24.4	.6
		23.8	.4
185	103.7	23.3	.3
		22.9	.2
		22.5	.1

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1930phae.proj..688A

	188		21.9 .0
			21.7 17.9
	190		21.6 .8
			21.2 .7
			20.4 .6
			20.1 .5
			19.9 .4
	195		19.6 .3
			19.2 .2
			18.9 .1
			18.7 16.9
			18.7 .8
	200	103.8	18.6 .7
			18.0 .6
			17.8 .5
			17.7 .4
			17.5 .3
3997.	204.4		17.5 .3
			17.1 .2
			16.8 .0
			16.7 15.9
			16.5 .8
			16.4 .7
	210	103.9	16.3 .6
			16.4 .5
			16.2 .4
			15.7 .3
			15.2 .2
	215		15.3 .1
			15.4 .0
			15.2 14.8

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1930phae.proj..688A

	218	14.9	.7
		14.7	.6
	220	14.8	.5
		14.9	.4
		14.7	.3
		14.7	.2
		14.8	.0
	225	14.5	13.9
		14.2	.8
		14.0	.7
		13.9	.6
		13.7	.5
	230	13.4	.4
4005.	244.6		12.3
4012.	265.2		10.8
4045.	356.7		6.8

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1930phae.proj..688A

MØ4566 W459 δ 0.005

	37	102.0	68.6	69.8
			70.2	.7
			71.3	.6
4012	(39.2)		71.4	.6
			70.9	.5
			69.7	.4
	41.7		68.8	.3
	42		69.1	.2
			69.1	.1
			70.0	68.9
			70.9	.8
			69.4	.7
			69.8	.5
			69.6	.4
			69.1	.2
	50		69.2	.0
	70	102.2	66.6	65.5
			66.7	.4
			66.1	.3
			67.0	.1
4024	73.8		67.7	.0
	74		67.5	.0
			65.8	64.9
			65.3	.8
			66.0	.7
			66.6	.6
?	78.6		67.3	.5
			67.1	.4
	80		64.4	.3
			64.2	.1
			64.7	.0

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1930phae.proj..688A

4028	(83)	65.9	63.9
		65.7	.8
		64.9	.7
	85.6	64.9	.6
		63.8	.5
		64.0	.4
		64.0	.3
	88.6	64.4	.2
	89.1	64.3	.1
4030	89.9	64.4	.0
	90.6	63.8	62.9
	91	63.8	.8
	92	63.2	.7
		62.5	.6
		62.0	.4
	93	63.0	.3
4033	95.8	63.7	.2
	97	62.7	.1
		62.1	.0
		60.3	61.9
	100	62.1	.8
		62.4	.6
4035	101.8	62.7	.4
	103	62.0	.3
		61.5	.2
	105	60.8	.1
		60.9	60.9
		61.8	.8
		60.1	.7
		60.1	.6
	110	102.3 60.6	.5

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1930phae.proj..688A

	111	59.5	.4
		60.3	.3
		61.2	.1
		61.0	.0
		59.8	59.9
		59.8	.8
		60.7	.7
		59.7	.6
		60.5	.5
	120	60.0	.4
		59.4	.3
		59.7	.2
		59.2	.1
		59.4	.0
		58.9	58.9
		58.2	.8
		58.0	.7
		59.9	.6
	128.8	59.1	.5
	129.5	59.8	.5
	130	60.3	.4
		63.9	.3
4045.	131.3	64.8	.3
		62.0	.2
		60.0	.1
		58.6	.0
		57.9	57.9
		57.8	.8
		57.4	.7
		58.0	.6
	139	58.7	.5

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1930phae.proj..688A

	140	57.9 .4
4048.	(140.8)	58.2 .3
	142	56.9 .2
		57.5 .1
		57.7 .0
		57.9 56.9
		57.2 .8
		57.9 .7
		57.6 .6
4052	(149)	57.9 .5
	150	57.8 .4
		56.7 .3
4053.	{	57.5 .2
	153.4	57.5 .2
	154	57.0 .1
	155	1024 56.0 .0
		56.3 .0
		56.8 55.9
		56.0 .8
		56.9 .7
	160	56.2 .7
		56.8 .6
		57.1 .5
		57.1 .4
		56.1 .3
		55.7 .2
		55.1 .1
		54.9 .1
		55.1 .0
		55.7 .0
	170	55.7 54.9

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1930phae.proj..688A

	171	54.8 .8
		55.1 .8
		55.7 .7
		54.9 .6
	175	54.1 .6
		54.5 .5
		55.6 .4
		57.1 .3
4063.	178	59.4 .2
	179.5	58.3 .2
	180	56.0 .1
	180.5	54.9 .1
	181	55.2 .1
		55.3 .0
		55.0 .0
		54.4 53.9
		102.5 54.0 .8
		54.8 .8
		55.7 .7
		55.8 .7
		54.8 .6
	190	102.5 54.3 .5
		54.9 .4
		54.0 .3
		54.0 .3
		54.2 .2
		1 ~~Oct.~~ 6 54.4 .2
		53.3 .1
		54.2 .1
		54.7 .0
	199	54.0 52.9

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1930phae.proj..688A

	200	102.6	57.5 .8
4071.	200.3		58.3 .8
	201		56.7 .8
	201.5		55.5 .7
	202		55.3 .7
	203		54.7 .7
			54.0 .6
	205		54.0 .5
			53.9 .4
			54.2 .4
			54.3 .3
			54.8 .2
	210		54.9 .1
			54.8 .1
			55.1 .0
			55.2 51.9
	214.2		55.2 .8
	215	1027	57.8 .8
4177.	215.3		58.9 .8
	216		58.1 .7
	216.5		56.0 .7
	217		55.0 .7
			55.0 .6
			54.3 .6
	220		55.7 .5
			55.6 .4
			56.0 .4
			55.9 .3
	2·		56.4 .2
	225		56.4 .1
			56.8 .0

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1930phae.proj..684A

227	56.9	50.9
	56.4	.9
	57.4	.8
	58.0	.7
	57.2	.7
232	57.9	.6
deflect 238	59.8	.2
	60.7	.1
239.4	61.8	.0
240	61.3	.0
	61.4	.0
	61.7	.0
	62.7	49.9
243.5	63.3	.9
	63.1	.8
244.6	62.7	.8
245	63.0	.7
	64.0	.7
	65.1	.6
	66.1	.5
	66.8	.4
250	66.7	.4
250.4	66.8	.3
251	67.3	.3
	69.6	.2
252.4	69.9	.2
253.4	69.9	.1
254	70.9	.1
	71.8	.0
	72.7	.0
256.4	73.0	48.9

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1930phae.proj..688A

	257	72.9 48.9
		74.6 .8
		75.2 .7
		75.9 .6
		78.1 .6
	261.5	78.3 .5
	262	78.6 .5
		81.2 .4
	263.5	80.9 .4
		83.8 .4
		84.2 .3
	266.2	84.3 .2
		84.1 .2
		85.7 .1
		87.7 .0
	270	90.0 .0
	270.5	90.4 47.9
	271	90.4 .9
	271.5	90.6 .8
		91.3 .8
		91.5 .8
		92.2 .7
		93.3 .7
		94.1 .7
		94.3 .6
	275	96.0 .6
		96.8 .6
		97.8 .6
4101.	276.8	98.8 .5
		98.7 .5
	277.5	97.5 .4

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1930phae.proj..688A

278		96.4	.3
		95.2	.3
		95.0	.3
		94.7	.3
280	102.8	94.4	.2
		93.6	.2
		92.8	.2
		92.0	.1
		90.8	.1
		90.3	.0
283		89.7	.0
284		87.9	.0
285		85.6	46.9
		85.2	.9
		83.8	.8
		81.0	.7
289.2		81.0	.6
290		79.4	.6
280.8		77.7	.5
291.3		77.8	.4
292		76.1	.4
		74.9	.3
		73.8	.3
295		72.1	.2
		71.3	.1
		70.2	.0
		69.2	.0
298.7		67.6	.0
299.4		67.5	45.9
300		67.0	.8
300.6		65.7	.8

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1930phae.proj..688A

301.3	65.7	.7
302	64.9	.7
	63.5	.6
	62.0	.6
	61.1	.5
305.5	60.9	.4
306.1	61.0	.4
307	60.3	.3
	57.8	.2
	57.4	.2
310	57.4	.1
	56.0	.0
	55.2	.0
	55.1	44.9
	54.9	.8
	54.7	.8
315.3	54.6	.7
316	53.4	.7
	52.6	.7
	53.0	.6
	51.9	.6
319.7	50.8	.5
320.3	51.6	.5
321	51.0	.4
	50.0	.3
	49.8	.2
	49.8	.1
325	48.7	.1
325.6	49.1	.0
326.4	49.0	.0
4118. 327.3	49.7	43.9

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1930phae.proj..688A

	328	48.8	.9
		47.8	.8
	330	48.6	.8
		47.2	.7
		47.8	.6
		46.9	.5
		46.3	.4
		46.3	.3
		46.4	.2
		45.9	.2
		45.8	.0
	338.6	45.1	.0
	339	45.3	.0
	339.5	46.2	.0
	340	46.9	.0
	340.5	47.7	.0
4(28.	341.1	49.0	42.9
	341.5	48.5	.9
	342	46.8	.9
	342.5	45.5	.8
	343	45.3	.8
	344	43.9	.7
	345	44.7	.6
	346	44.5	.5
	346.5	45.2	.5
	347	47.1	.4
4(31	347.6	48.8	.4
	348	47.8	.4
	348.5	44.2	.4
	349	43.2	.3
	350	44.5	.2

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1930phae.proj..688A

	351	44.9	.1
4132	(351.2)	45.0	.1
	352	44.0	.1
		43.3	.0
		43.2	.0
		42.4	41.9
		42.4	.8
		43.0	.8
		43.1	.7
		41.8	.6
	360	41.2	.6
		41.6	.5
		40.9	.4
		42.0	.3
		42.2	.2
		41.7	.2
		42.3	.1
		40.3	.0
		41.0	.0
		41.6	40.9
	370	40.9	.8

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1930phae.proj..68A

μ Φ 4565 W 459 δ 0.005

4045.	24.3			
4053.	46.5			
	65	103.6	17.6	17.7
			17.8	.7
			17.8	.6
			17.4	.6
	~~80~~		17.5	.5
	70		17.9	.5
	70.2		17.8	.5
	71		19.6 ~~19.~~	.4
4063.	71.6		20.3	.4
	72	103.7	19.9	.4
	73		17.8	.3
	73.6		16.9	.3
	74		17.0	.3
			17.2	.2
			17.3	.2
			17.3	.2
			16.9	.1
			17.1	.1
	80		17.6	.1
			17.5	.0
			17.5	.0
			17.4	.0
			17.0	.0
		103.8	16.6	16.9
			17.0	.9
			17.2	.9
			17.0	.8
			17.2	.8
	90		17.2	.8

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1930phae.proj..688A

	91		17.5	.7
			17.6	.7
			18.8	.7
4071	93.1		18.9	.7
			18.0	.6
	94.8		17.2	.6
	96		17.2	.5
			17.0	.5
			16.7	.4
			16.8	.4
	100		17.0	.3
			17.2	.3
			17.0	.3
			17.2	.2
			17.0	.2
		103.9	16.9	.2
	106		17.8	.1
	107.2		17.8	.1
	108		19.0	.1
4077.	108.5		19.9	.1
			19.5	.0
			17.9	.0
			17.6	.0
			17.4	.0
			17.8	.0
			17.9	15.9
	115		17.7	.9
			17.6	.9
			17.7	.8
			17.8	.8
			17.9	.8

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1930phae.proj..688A

120		18.0	15.7
		18.2	.7
		18.5	.7
		18.9	.6
		19.2	.6
125		19.1	.5
		19.2	.5
		19.8	.4
		20.0	.4
		19.8	.3
130		104.0 20.3	.3
130.7		20.7	.2
131.5		20.3	.2
132		20.7	.2
		21.3	.1
		21.1	.1
		21.7	.1
		220	.0
		23.0	.0
		23.3	.0
		23.9	.0
140		24.3	14.9
140.8		25.3	.9
141.7		25.0	.9
143		25.5	.8
		26.9	.8
		27.7	.8
145.6		27.7	.7
146		28.2	.7
		28.9	.7
148		104.1 30.1	.7

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1930phae.proj..688A

149	30.6	.6
150	32.0	.6
	33.0	.6
151.5	33.4	.5
	33.9	.5
	36.1	.4
153.8	37.8	.4
154	38.0	.4
	38.7	.3
	40.7	.3
	42.0	.3
	44.2	.2
	46.0	.2
160	48.0	.2
160.4	49.6	.1
161	50.3	.1
162	53.1	.1
163	56.1	.0
163.5	58.1	.0
164	59.8	.0
164.5	61.2	.0
165	104.2 62.3	.0
165.5	63.7	.0
166	65.1	.0
166.5	67.9	.0
167	70.2	.0
167.5	73.1	.0
168	76.3	13.9
168.5	79.4	.9
169	82.7	.9
169.7	84.8	.9

4101.

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1930phae.proj..68M

170	83.4	13.8
170.5	79.5	.8
171	75.8	.8
171.5	72.8	.8
172	70.2	.8
172.5	68.5	.8
173	67.0	.7
173.5	65.5	.7
174	63.5	.7
174.5	61.6	.7
175	59.9	.7
176	56.0	.7
177	53.4	.6
178	49.6	.6
179	46.7	.6
180	104.3 44.9	.5
180.5	44.4	.5
181	42.8	.5
	40.7	.4
	38.9	.4
	37.5	.4
184.5	36.6	.3
185	34.9	.3
	33.1	.3
	31.8	.2
	30.7	.2
	30.0	.1
190	29.1	.1
	27.9	.0
191.5	27.5	.0
	26.3	.0

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1930phae.proj..688A

	193	24.9	12.9
		24.3	.9
		23.6	.9
		23.0	.8
		22.4	.8
		21.3	.8
		20.7	.7
	200	104.4 20.0	.7
		19.8	.7
defect	202	19.7	.6
	207	16.9	.4
		16.9	.4
		16.4	.3
	210	16.9	.3
		16.6	.2
		15.7	.2
		15.3	.2
	213.5	14.9	.2
	214.3	14.9	.1
	215	14.2	.1
		14.2	.1
		14.3	.0
		14.0	.0
		14.0	.0
	220	14.3	.0
4|18	220.1	14.3	.0
	224	14.0	11.9
		13.6	.9
		13.4	.8
		13.0	.8
	225	12.9	.7

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1930phae.proj..688A

	226		13.0	.7
			13.0	.7
			12.8	.6
			12.4	.6
	230	104.5	12.2	.5
			12.3	.5
			12.7	.4
			14.3	.4
4/28	233.3		14.7	.4
			13.9	.3
	234.7		12.5	.3
	235		12.3	.3
			11.9	.3
			11.4	.2
			12.0	.2
			12.2	.2
4/31	240.1		14.1	.1
			12.2	.1
	241.4		11.7	.0
	242		11.7	.0
4/32	242.8		12.2	.0
	244		11.6	.0
			11.2	10.9
			11.2	.9
			11.1	.9
			11.0	.8
			11.0	.8
	250	104.6	10.9	.8
			10.8	.7
			10.7	.7
			10.6	.7

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1930phae.proj..688A

254		10.3	.6
		10.4	.6
		10.7	.6
		10.7	.5
		10.6	.5
		10.7	.4
260	104.7	10.6	.4
		10.0	.3
		10.2	.3
		10.3	.3
		10.1	.2
265		10.0	.2
		10.1	.1
		10.1	.1
		10.0	.0
		10.4	.0
		10.9	.0
		10.9	.0
272		9.9	9.9

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1930phae.proj..688A

μ Ø 4568 W459 r-δ 0.005

4128	5.1				
4131	11.8				
	40	102.1	59.0	58.9	
			59.3	.9	
			59.9	.9	
4143.	42.8		60.3	.8	
	43		60.2	.8	
			59.7	.7	
	45		58.8	.7	
			58.8	.6	
			59.2	.5	
4146	47.7		59.4	.4	
	48		59.2	.4	
			58.5	.3	
	49.6		58.1	.3	
	51		58.1	.2	
			58.1	.1	
			57.9	.0	
			57.1	57.9	
			57.9	58.9	
			58.8	.8	
			58.6	.7	
			57.6	.6	
			56.9	.5	
	60		57.3	.4	
			57.3	.3	
			57.5	.2	
			57.5	.1	
			57.8	.0	
			57.6	56.9	
	66		57.8	.8	

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1930phae.proj..688A

	67	57.5	.7
	67.3	57.3	.7
4154	(68.2)	58.0	.7
		57.6	.6
	70	56.9→	.6
	75	56.0→	
	80	55.7→	
	85	55.2→	
	86	55.0	55.0
		54.6	54.9
	88	54.7	.8
	88.5	55.7	.8
	89	56.7	.8
4163	89.5	57.0	.7
	90	102.0 56.8	.7
	90.5	55.6	.7
	91	55.2	.6
	92	55.0	.5
		55.0	.4
		54.8	.3
	95	54.8	.3
	100	54	53.8
	105		53.4
	106	53.8	53.3
		54.8	.2
4171		55.1	.2
		55.2	.1
	110	54.7	.0
	110.7	34.3	52.9
	111	54.7	.9
	111.5	55.9	.8

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1930phae.proj..688A

	112	56.7 .8
4173.	112.2	56.9 .8
	113	55.6 .7
	113.5	54.3 .7
	114	53.6 .6
	114.5	53.2 .6
	115	52.9 .5
	116	53.0 .4
		53.2 .3
		53.4 .2
		53.4 .2
	120	53.2 .1
		53.0 .0
		53.3 51.9
		53.2 .8
	123.5	54.0 .8
	124	55.1 .8
	124.7	55.7 .7
	125	55.3 .7
	125.5	54.1 .6
	126	53.0 .6
	126.5	52.1 .5
	127	51.7 .5
		51.7 .4
		51.8 .3
	130	52.0 .2
	135	50.8
	140	51.1 50.3
	141	51.0 .2
		51.0 .1
		51.8 .0

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1930phae.proj..688A

4188	144	51.6	.0
	144.7	51.7	~~49~~.0
	146	50.6	49.9
		49.3	.8
		49.4	.7
		49.0	.6
	150	101.9 49.5	.5
		50.0	.4
		50.7	.3
4192	152.7	50.9	.3
	154	50.6	.2
	155	49.9	.1
	155.7	48.7	.0
	157	48.7	.0
	158	49.0	48.9
	159	49.1	.8
	160	49.1	.7
		49.6	.6
		49.6	.5
		~~49~~.6	.4
		48.9	.3
	165	~~48~~.5	.2
		~~48~~.1	.1
		48.0	.0
		~~48~~.9	~~47~~.9
4198	168.9	49.6	.9
	170	49.0	.8
	~~169~~	~~48~~.9	.7
4199.	170.5	~~47~~.9	.6
	170.6	47.9	.5
	173	47.8	.4
	174		

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1930phae.proj..6804

	175	48.0 .3
		48.4 .3
4202.	177	49.3 .2
		48.3 .1
		47.3 .0
	180	46.4 .0
		46.8 46.9
		46.8 .8
		46.1 .7
		46.5 .6
	185	46.3 .5
	190	101.8 46.1
	195	45.7
	200	45.2
	205	44.9 44.8
	205.5	45.2 44.8
	206	46.2 .8
4215.	206.7	47.1 .7
	207	46.9 .7
	207.5	46.0 .6
	208	45.3 .6
	208.5	44.5 .5
	209	44.1 .5
	210	44.1 .4
		44.1 .3
		44.2 .2
		44.7 .1
		44.0 .0
		44.6 43.9
4219.	216	44.7 .8
	216.5	44.7 .8

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1930phae.proj..688A

	217	44.1 .7
	218	43.2 .7
		43.0 .6
	220	44.0 .5
	225	43.0
	229	43.2 42.7
	229.5	43.5 .7
	230	44.0 .6
	230.5	44.9 .6
	231	45.9 .5
(4227	231.2	46.1 .5
	232	45.2 .4
	232.5	44.2 .4
	233	43.5 .4
	233.6	42.7 .3
	238	42.0
	242	41.9 41.7
	243	42.0 .6
	243.5	42.8 .5
	244	43.0 .4
	244.5	45.6 .3
4233.	245.1	46.6 .3
	245.5	45.9 .2
	246	44.0 .2
	246.5	42.4 .1
	247	41.2 .1
	248	41.1 .1
	249	41.0 .0
	250	41.7 .0
4235	(251)	42.0 40.9
	252	41.8 .8

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1930phae.proj..688A

	253	41.4	.7
		40.0	.6
	255	40.5	.5
	260	42.7	40.1
	263	40.0	39.9
4242	264	41.0	.8
	265	41.0	.7
	266	39.4	.6
		39.5	.5
		39.5	.4
		39.1	.3
	270	39.8	.3
		39.5	.2
		39.5	.1
		40.3	.0
4246.	2738	41.3	.0
	274	41.2	.0
	274.7	40.0	38.9
	275	39.8	.9
	275.5	39.5	.8
	276	38.8	.8
		38.4	.7
		38.5	.7
		38.0	.6
	280	38.8	.5
	280.7	39.7	.4
	281	39.8	.3
4250.5	281.6	40.0	.3
	282	39.9	.3
	282.5	39.1	.3
	283	38.8	.2

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1930phae.proj..688A

	284	37.8 .2
	285	37.3 .1
	290	37.8
	295	37.3
	296	36.1 .2
	297	37.5 .1
4258	297.3	37.8 .1
	298	37.6 .0
	299	36.8 36.9
	300	36.2 .8
	301	37.5 .7
4260.	301.8	38.0 .7
	302.5	37.8 .6
	303	37.3 .6
	304	37.0 .5
	305	37.0 .4
	310	36.0
	313	35.8 35.8
	314	36.4 .7
?	314.3	36.8 .7
	315	36.4 .7
	316	35.3 .6
	320	35.3
	321	35.2 35.2
	322	35.2 .2
	322.4	35.2 .2
	323	36.3 .1
	323.5	37.6 .1
	324	38.1 .1
4271	324.4	38.3 .1
	325	37.7 .1

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1930phae.proj . 688A

325.5
326
327
330
335
340
345
350
4296, 374.0
378
378.5
379
379.5
380
4300. 380.7
381
381.5
382
382.5
383

35.8 .0
35.3 .0
34.6 .0
101.6 34.8
34.7
34.2
34.1
33.8

325 32.6
33.1 .5
33.9 .5
34.8 .4
35.7 .4
36.3 .3
36.1 .3
34.7 .3
33.2 .3
32.1 .2
31.9 .2

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1930phae.proj..688A

μ Ø 4569 W459 δ 0.004

4296.	26.6	101.7	16.3	15.6
	27		16.2	.6
	28		15.9	.6
			15.5	.6
	30		15.3	.5
			15.7	.5
			16.2	.5
			18.2	.4
4300.	33.4		18.7	.4
			17.8	.4
			16.3	.4
	35.5		15.5	.3
	36		15.7	.3
4302	37.1		17.0	.3
	38		16.3	.3
	39		17.4	.3
4303	39.3		17.7	.3
	40		17.0	.2
	40.7		15.6	.2
	42		15.5	.2
			15.6	.2
			15.8	.2
			15.8	.2
			15.8	.2
			16.2	.1
	47.3		16.2	.1
	48		18.3	.1
4307	48.5		19.1	.1
	49		18.1	.1
	49.5		16.7	.1
	50		16.2	.1

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1930phae.proj..688A

	51	16.0	.1
		16.1	.0
		15.8	.0
		15.9	.0
	53	15.8	.0
		16.0	.0
		16.2	.0
		17.3	.0
4312	58.4	17.7	.0
	59	16.9	.0
	59.6	16.4	.0
	60	16.7	14.9
L	60.5	17.3	.9
	61	17.4	.9
	62	17.7	.9
4315	62.7	17.8	.9
	63.4	16.7	.9
	64	16.5	.9
		101.6 16.1	.8
	65.5	16.8	.8
	66	16.6	.8
	66.8	17.0	.8
	67.8	16.6	.8
	69	17.2	.8
	70	16.8	.7
		16.9	.7
		17.3	.7
		18.2	.7
		18.2	.7
	75	18.0	.7
	76	18.2	.6

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1930phae.proj..688A

	77	18.8	14.6
		18.8	.6
		18.8	.6
	80	19.4	.6
	80.9	19.7	.6
	81.5	20.7	.5
	82	22.0	.5
	82.5	23.3	.5
4325	(83.0)	23.4	.5
	83.5	22.7	.5
	84	22.1	.5
	85	101.5 21.7	.4
		22.3	.4
	86.5	22.3	.4
	87	23.0	.4
		23.9	.4
		24.5	.3
	90	25.3	.3
		26.7	.3
	91.8	27.5	.3
	92.3	27.2	.3
	93	28.2	.3
	93.5	28.6	.2
	94	29.1	.2
	94.5	30.1	.2
	95	101.4 30.3	.2
	96	31.8	.2
	96.5	32.9	.1
	97	33.6	.1
	97.6	34.8	.1
	98	34.9	.1

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1930phae.proj..688A

	99	32.8	.1
	100	40.4	.1
	100.4	41.4	.1
	101.2	41.3	.1
	102	44.0	.6
	102.5	44.3	.0
	103	45.7	.0
	103.5	47.5	.0
	104	49.0	.0
	104.5	51.0	.0
	105	53.8	.0
	105.7	56.8	.0
	106	57.0	.0
	106.5	58.2	.0
	107	60.0	.0
	107.5	62.3	.0
	108	64.5	.0
	108.5	67.8	.0
	109	71.7	13.9
	109.5	75.8	.9
	110	10638 80.0	.9
4340.	110.5	81.8	.9
	111	80.0	.9
	111.5	76.2	.9
	112	71.3	.9
	112.5	68.1	.9
	113	65.5	.9
	113.5	61.9	.8
	114	59.7	.8
	114.5	57.8	.8
	115	56.0	.8

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1930phae.proj..688A

	115.5	54.0 .8
	116	52.3 .8
	116.5	50.6 .8
	117	48.8 .7
	117.2	48.0 .7
	117.5	47.7 .7
	118	46.8 .7
	118.5	45.3 .7
	119	42.9 .7
	120	41.5 .7
defect <	123	35.0 .7
	124	33.2 .7
	124.5	32.3 .6
	125	32.3 .6
	126	31.3 .6
	126.3	31.3 .6
	127	28.8 .6
	127.5	28.4 .6
	128	28.0 .6
	129	27.0 .6
	130	101.2 26.7 .5
	131	26.5 .5
4351.	131.8	27.6 .5
	133	23.8 .5
	134	21.8 .5
		21.2 .4
		20.9 .4
	136.2	20.9 .4
	137	20.0 .4
	137.2	19.7 .3
	138.2	19.5 .3

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1930phae.proj..688A

139		18.7 .3
140	~~101.1~~ 101.0	18.5 .3
		18.4 .2
141.5		18.4 .2
142.3		17.4 .2
143		17.7 .2
		17.2 .2
		17.2 .2
		16.3 .1
		16.0 .1
		16.4 .1
		16.0 .1
150		15.5 .1
		15.4 .1
		15.2 .0
		14.9 .0
		14.8 .0
		14.7 .0
		14.6 .0
		15.0 .0
		14.3 .0
		14.7 .0
160		14.6 12.9
		14.8 .9
		14.8 .9
		14.4 .9
		14.2 .9
165		13.9 .8
		13.6 .8
166.6		14.2 .8
167		13.9 .8

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1930phae.proj..688A

	168		13.7	.8
			13.2	.8
	170	101,0	13.7	.8
			13.4	.7
			13.1	.7
			13.5	.7
			13.4	.7
defect	174			
	179		12.8	12.6
	180		12.7	.6
			12.8	.5
			12.9	.5
			12.9	.5
			12.1	.4
	185		12.3	.4
			12.5	.4
			12.5	.3
			13.0	.3
			14.2	.3
4383	189.5		15.1	.3
	190		14.6	.3
			13.3	.3
			13.4	.2
(4385.	192.6		13.7	.2
	193		13.6	.2
			12.8	.2
			12.6	.2
			12.8	.1
			12.8	.1
			12.1	.1
			12.2	.1
	200		12.1	.0

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1930phae.proj..688A

4395.	210.3			
4399	218.8			
4404	227.4			
4416	249.3			
4443	295.6			
4468	336.6			
	354	100.0	8.2	8.0
	354.5		8.2	.0
	355		8.7	.0
	355.5		9.6	.0
	356		13.0	.0
4481.	356.7		16.9	.0
	357		16.0	.0
	357.5		11.6	7.9
	358		9.5	.9
	358.5		8.4	.9
	359		8.2	.9
	360		8.1	.9
4501.	373.2			

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1930phae.proj..688A

μ Φ4570 W459 γ 0.004

	0	103.2 59.0	57.9
	1		58.2 .9
	2		57.8 .9
	2.5		58.5 .8
	3		59.0 .8
4284.	3.3		59.1 .8
	4		58.7 .8
	4.7		58.2 .7
	5		58.3 .7
			58.3 .7
			58.0 .7
			58.1 .6
			57.6 .6
	10	103.1	58.8 .6
4288	10.1		58.9 .6
	11		57.8 .5
	11.5		57.3 .5
	12		57.7 .5
	13		57.9 .5
	13.5		58.1 .4
	14		59.0 .4
	14.5		60.6 .4
4290.	15.1		61.6 .4
	15.5		60.0 .3
	16		58.3 .3
	16.6		57.1 .3
	17		57.7 .3
			57.3 .2
4292			57.9 .2
	19.5		57.9 .2
	20	103.0	57.0 .2

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	21		56.7	.1
	21.5		57.4	.1
	22		58.6	.1
	22.8		60.8	.1
	23		60.3	.1
	23.5		57.0	.0
	24		57.1	.0
	25	102.9	56.9	.0
	26		57.7	.0
	26.7		57.7	56.9
	27		58.3	.9
4296.	27.4		59.1	.9
	28		58.0	.9
	28.4		56.9	.8
	29		57.2	.8
	30		57.2	.8
	31		57.0	.7
	32		56.4	.7
	32.8		57.8	.7
	33.3		57.8	.7
	34		60.1	.7
4300.	34.5		61.7	.6
	35		60.5	.6
	35.5		57.6	.6
	36.2		56.1	.6
	37		56.8	.6
4302	37.9		59.2	.6
	39		57.8	.5
	39.5		58.1	.5
	40	1028	59.4	.5
4303.	40.5		60.7	.5

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	41	60.2	.4
	42	57.1	.4
	43	56.0	.4
	44	55.7	.3
	45	56.5	.3
4306	46.1	57.8	.3
	47	55.5	.2
	48	57.4	.2
	48.5	58.0	.2
	49	60.5	.2
4307.	49.6	62.7	.1
	50	61.1	.1
	50.5	58.5	.1
	51	57.8	.1
	52	55.9	.1
	53	56.5	.0
	54	56.7	.0
	55	57.0	.0
		57-7 55.9	
		57.8	.9
		57.1	.9
4312	59.3	58.9	.8
	60.8	58.4	.8
4315	62.8	60.5	.7
	63	60.3	.7
	64	60.0	.7
	65	102.7 58.0	.6
		58.2	.6
		58.4	.6
		58.8	.5
	69	59.3	.5

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	70	59.7 .4
	70.6	58.6 .4
	72	59.8 .4
	73	59.2 .3
	73.5	60.4 .3
4321	74.2	60.9 .3
	75	60.0 .2
	76	61.0 .2
	76.5	61.5 .2
	77.5	61.3 .1
	78	61.7 .1
	79.4	62.7 .1
	80	62.1 .1
	81	62.8 .0
	82	64.7 .0
	82.5	64.8 .0
	83	66.1 .0
4325.	83.7	67.8 54.9
	84	67.6 .9
	84.5	66.0 .9
	85	65.2 .9
	86	65.7 .8
	86.3	65.8 .8
	87	65.5 .8
	88	68.0 .8
	88.6	68.7 .7
	89.3	68.4 .7
	90	70.0 .7
	91	70.7 .7
	91.6	71.5 .6
	92.3	71.5 .6

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	93	73.0	.6
	93.4	73.0	.6
	94	73.3	.6
	94.3	73.3	.6
	95	74.3	.5
	96	75.5	.5
	96.6	75.5	.5
	97.6	77.7	.5
	98	77.8	.5
	99	80.3	.4
1 -	99.3	81.3	.4
	100	81.7	.4
	100.7	83.0	.4
	101.2	83.0	.4
	102	84.6	.3
	102.5	85.6	.3
1	103.1	86.5	.3
	104	86.5	.3
	104.5	87.5	.3
	105	88.2	.3
	105.5	89.1	.2
1	106.3	91.4	.2
	107	91.7	.2
	108	93.0	.2
	109	94.1	.1
	110	102.6 96.2	✓
	110.5	98.2	.1
	111	99.4	.0
4340.	111.7	100.0	.0
	112	99.7	.0
	112.5	98.4	.0

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113	97.0 .0
113.7	95.2 53.9
114	95.0 .9
114.5	94.5 .9
115	93.8 .9
115.5	93.1 .8
116	92.1 .8
116.3	91.9 .8
117	90.7 .8
117.8	88.1 .8
118.5	88.5 .8
119	87.8 .7
120	86.0 .7
120.3	86.0 .7
121.1	84.2 .7
121.5	84.2 .6
122.7	80.5 .6
123.3	80.7 .6
124	~~78.8~~ 79.8 .6
125	78.2 .5
126	75.3 .5
126.7	75.3 .5
127.2	74.4 .5
128	74.3 .4
129	73.8 .4
129.4	73.7 .4
130	1025 72.0 .4
130.6	72.0 .3
131.5	70.6 .3
132.6	72.3 .3
133	71.6 .3

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134	68.2	.2
	67.1	.2
	67.2	.2
136.7	66.3	.1
137	664	.1
138	64.0	.1
138.6	64.2	.0
139.4	62.3	.0
140.2	102.9 63.2	.0
141.4	61.7	.0
142.1	62.1	52.9
143.0	61.2	.9
143.4	61.5	.9
144	60.8	.9
145	60.0	.8
	59.8	.8
	59.0	.8
148	59.8	.8
148.8	59.9	.7
150	47.8	.7
	57.9	.7
151.2	58.1	.7
	57.5	.6
152.8	56.3	.6
153.2	56.3	.6
154	56.3	.6
154.8	102.3 56.1	.5
155.6	55.1	.5
156.6	55.1	.5
157	55.2	.4
	55.2	.4

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	159		55.7 .4
		102.2	56.2 .3
4367	162		56.6 .3
	162.7		56.1 .3
	163.2		56.4 .2
	164		55.0 .2
	164.9		53.0 .2
	166		53.9 .1
	167		53.4 .1
	167.3		53.3 .1
	168		53.9 .0
	169.2		52.3 .0
	170.2		53.5 .0
			53.3 .0
			53.2 51.9
			53.3 .9
			53.0 .9
	175		53.0 .8
	175.5		53.0 .8
	176.2		52.0 .8
	177		52.4 ~~51.8~~ .7
	178		51.8 .7
	178.3		52.6 .7
	180		52.0 .6
			51.9 .6
			52.0 .6
			51.4 .5
			51.7 .5
	184.8		52.6 .5
	186	102.1	51.8 .4
	187		51.2 .4

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	~~188~~	~~57.1~~	
	188	51.2	.3
	189	51.5	.3
	189.5	51.1	.3
	190	53.3	.3
4383	190.8	35.7	.2
	191.5	54.0	.2
	192	53.0	.2
	192.5	52.8	.2
	193	53.0	.1
4385.	193.9	53.7	.1
	194.5	52.8	.1
	195.3	51.7	.0
	196.2	52.2	.0
	197	52.1	50.9
		50.8	.9
		50.9	.8
	200	50.8	.8
	203	50.9	.6
4391	203.9	51.9	.5
	205	51.6	.5
	206	51.2	.4
	207	51.3	.4
		50.4	.3
	209	51.3	.2
	210.2	102.0 51.2	.1
	211	55.0	.0
4395	211.3	55.7	.0
	212	~~53.9~~	.0
	212.5	52.6	.0
	213	51.7	49.9

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	213.6	49.9	.9	
	218	49.8	.8	
	219	50.8	.7	
4399.	219.4	51.3	.7	
	220	51.1	.7	
	220.6	50.9	.6	
	221.6	50.0	.6	
	227	49.7	.3	
	227.5	50.0	.3	
	228	51.8	.2	
4404.	228.3	52.3	.2	
	229	51.5	.2	
	229.5	50.0	.1	
	230	48.8	.1	
	238.5	48.8	48.7	
	239	49.5	.7	
4411	239.3	49.8	.6	
	240	101.9	49.2	.6
	24	47.9	.6	
	244	48.5	.4	
	245	49.8	.3	
	245.8	49.4	.2	
4415	247	50.2	.1	
	248.3	48.3	.1	
	249	49.0	.0	
	250	50.8	.0	
4416.	250.6	51.2	.0	
	251.3	50.3	47.9	
4417.	252	50.3	.9	
	252.4	49.5	.9	
	253	49.2	.8	

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	254			48.0	.8
	280.6		101.8	46.2	45.9
	281.3			47.0	.8
-4434	281.8			47.7	.8
	282.1			47.0	.7
	283			46.2	.7
	283.3			45.8	.6
	295		101.7	45.3	44.9
	295.5			45.5	.9
	296			47.3	.8
4443	296.4			49.3	.8
	297			47.9	.7
	297.5			46.5	.7
	298			45.3	.7
	298.5			44.9	.6
	305.5		101.6	44.3	43.9
	306.			44.8	.9
	307			45.9	.9
4450	307.3			46.1	.8
	308.4			44.8	.8
	309			44.8	.7
	913.3			42.3	.4
	314			43.7	.3
4455	(314.6)			44.0	.2
	315			44.0	.2
	315.7			43.3	.1
	336		101.5	40.6	41.1
	336.5			41.1	.1
	337			43.0	.0
4468	337.7			44.8	.0
	338			44.0	4 0.9

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	338.5		42.3	.8
	339		41.9	.8
	340	101.4	41.8	.7
	341		41.9	.7
4471	341.3		42.1	.6
	342.2		41.5	.6
4472	342.9		42.0	.5
	343.5		40.3	.4
	355	101.3	39.0	39.2
	355.5		39.2	.1
	356		40.1	.1
	356.5		41.9	.0
	357		(50)	.0
4481	357.7		57.3	38.9
	358		(55)	.9
	358.5		49	.8
	359		42.4	.7
	359.5		39.9	.7
	360		38.8	.6
	368		36.7	37.8
	368.5		37.6	.7
4489	(369)		38.0	.6
	369.5		38.6	.6
	370	101.2	38.9	.5
4491	370.6		39.5	.4
	371		39.2	.3
	371.8		38.0	.3
	372.5		37.7	.2
	373		37.3	.1
	374		38.8	.1
4501	374.2		38.9	.0
	375		37.8	.0
	375.5		36.9	.0

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	0.005				0.005				0.001				0.003			
u	u_0	u/u_0	H	$\log T$	u_0	u/u_0	H	$\log T$	u_0	u/u_0	H	$\log T$	u_0	u/u_0	H	$\log T$
5			–		102.3		9.2		102.5		25.2		105.0		38.5	
10			–				17.1				33.3				46.2	
15			–				22.7				37.8				50.8	
20			–				26.6		102.6		41.8				54.7	
	104.3		5.0		102.4		30.0				44.6				58.4	
30			7.9				32.7		102.7		47.2		105.1		61.4	
			10.2				35.3				49.5				64.0	
40			12.2				37.3				51.7				66.3	
			14.0				38.4				54.3				68.8	
50	104.2		15.8				41.8		102.8		57.0				70.9	
			18.0				44.0				59.5				73.0	
60			20.4		102.5		46.0				62.0				75.6	
			22.8				48.6				64.5				77.4	
70	104.1		25.3				50.8				67.0				80.2	
			27.4				52.9				69.3				82.4	
80			29.7		102.6		55.7				72.3				85.3	
			32.9				59.2		102.9		75.4				88.8	
90			36.2				64.0				79.8				93.1	
			40.6				68.3				85.1				(100)	
100	104.0		49.3		102.7		81.8				–				–	
H_0			101.8				102.1				101.1				102.3	

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μφ 4550 w467 K-He 0.003

	1	100.5	71.0 70.7
			69.9 .6
			71.1 .4
3926	3.7		71.8 .2
	5		71.3 .1
			70.5 .0
			70.5 69.9
			69.3 .8
			69.5 .6
	10		69.7 .4
			69.8 .2
			70.0 .0
			69.7 68.9
			70.3 .8
			70.2 .6
			70.0 .4
			70.2 .3
			69.8 .2
			69.8 .0
	20		69.6 67.8
			68.8 .7
			67.4 .6
			67.3 .4
	23.5		68.0 .3 .2
	24		68.3 .2
	25		69.3 .0
	25.5		70.1 66.9
	26		71.3 .8
	27		74.4 .8
3930.	27.6		74.8 .7
	28		74.4 .6

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	28.5	72.1	.5
	29	70.2	.4
	29.5	68.7	.3
	30	67.9	.2
	31	68.0	.1
	31.5	70.5	.0
	32	72.8	65.9
3932	32.4	73.3	.8
	33	73.0	.7
	33.7	72.4	.6
	34	72.8	.6
	34.5	75.0	.5
	35	100.6	78.9 .4
	35.5	84.0	.3
	36	89.3	.2
	36.5	94.0	.1
3933.	37.2	97.9	.1
	38	96.6	.0
	38.5	93.3	64.9
	39	87.5	.8
	39.5	81.7	.8
	40	76.5	.7
	40.5	72.0	.6
	41	69.7	.5
	41.5	68.4	.4
	42	67.9	.3
	42.7	67.7	.2
	44	70.4	.0
3936	44.9	72.7	63.9
	45.5	71.1	.8
	46	68.9	.7

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	47	65.7 .6
	48	64.1 .4
	48.4	63.8 .3
	49	64.0 .2
	50	65.7 .1
	50.5	67.4 .0
	51	64.3 62.9
	51.5	71.8 .8
	52	73.5 .7
3938.39	52.3	73.9 .7
	53	73.0 .6
	53.4	71.7 .5
	54	68.9 .4
	54.5	67.8 .3
	55	66.2 .3
	56	63.2 .2
	57	62.7 .0
	58	62.1 61.8
		62.2 .7
	60	62.3 .5
		62.2 .3
		62.3 .2
		61.7 .0
		61.6 60.9
		60.0 .7
		60.5 .6
	67.2	60.5 .5
	67.9	62.0 .3
	68.5	63.0 .2
3944?	69.3	64.8 .1
	70	64.2 .0

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	71	62.4 59.8
	71.2	62.3 .8
	72	62.7 .6
	72.5	64.3 .5
3945	73.2	65.6 .4
	74	64.0 .3
	75	100.7 60.9 .1
		59.6 .0
		59.2 58.9
		59.2 .7
		60.4 .5
3952	80	60.8 .3
		60.3 .1
		58.5 .0
		57.8 57.8
		57.8 .7
		57.9 .5
		57.4 .3
		57.0 .2
		57.3 .1
		57.8 .0
	90	57.2 56.9
		57.2 .8
		56.9 .6
		59.6 .4
3956	93.7	61.3 .3
	94	61.0 .2
	95	57.4 .1
		56.8 .0
	97	56.1 55.8
	98	55.3 .7

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Desert	112.	53.8	53.7
	113	54.0	.5
	114	53.3	.3
	115	53.3	.1
	116	53.2	.0
	106	54.3	54.5
		53.3	.3
3959	107.9	53.6	.2
	108.5	55.0	.1
	109.5	55.0	.0
	110.5	54.0	53.9
	111	53.4	.8
	117	52.6	52.9
	118	52.3	.8
	119	53.3	.6
	119.4	53.5	.5
	120	53.8	.4
	120.5	55.5	.3
	121.3	52.0	.1
	121.8	52.0	.0
3966.	122.3	58.2	51.0
	123	51.3	51.9
	124	54.6	.8
	125	52.8	.7
		52.0	.5
		52.6	.3
		52.2	.2
		52.3	.0
	129.5	52.1	50.9
	130	52.6	.8
	131	54.0	.7
3964	132	55.6	.5
	133.	54.4	.4
	133.8	53.9	.2
	134.7	54.8	.1
	135.4	54.8	.0
3966	136.3	56.3	.0

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	137	56.3	48.9
	137.7	56.7	.8
	138.0	56.7	.7
	138.5	57.2	.6
	139	57.9	.6
	139.5	59.0	.5
	140	100.8 61.1	.4
	140.5	63.9	.3
	141	69.3	.2
	141.5	75.0	.1
	142	82.5	.1
	142.5	90.3	.0
	143	95.4	48.9
3968.	143.3	96.2	.8
	144	94.4	.8
	144.5	91.9	.7
	145	88.3	.7
	145.3	87.7	.6
	146	89.6	.5
	146.5	92.0	.4
	147	94.1	.3
3970.	147.7	95.3	.2
	148	95.2	.2
	148.5	94.5	.1
	149	92.3	.1
	149.5	89.2	.0
	150	(83.8)	.0
	150.5	79.0	47.9
	151	74.3	.8
	151.6	71.0	.7
	151.7	69.0	.7

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	152	67.0	.6
	153	63.2	.5
	154	59.7	.3
	155	57.7	.2
	156.5	56.4	.1
	158	55.3	.0
	156.6	54.6	46.9
	158	54.6	.8
	159	56.8	6
3974	159.8	58.2	.5
	160.5	56.7	.4
	161	54.8	.3
	162	52.3	.2
	163	50.6	.0
	164	48.8	45.9
	165	47.3	.7
	[166.]	46.0	.6
	166.5	45.8	.5
	167.5	47.0	.3
	168.7	46.7	.1
	170.3	47.3	.0
	171	468	44.9
	172.3	45.9	.7
	173	45.9	.6
	174.3	45.1	.1
	175	45.3	.3
	175.5	46.1	.2
	176	49.1	.1
3979	[176.5	50.4	.1
	177	48.7	.0
	177.5	48.0	43.9

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1930phae.proj..688A

	178	46.7	.9
	179	44.0	.7
	179.5	43.4	.6
	180	43.2	.5
	181	43.4	.4
	181.5	43.8	.3
	182	44.9	.2
	182.5	46.5	.1
	183	47.2	.0
3982	183.3	47.6	42.9
	184	47.3	.9
	184.5	46.8	.8
	185	45.7	.8
	185.5	44.2	.7
	186	43.4	.6
	186.5	42.9	.5
	187.4	42.9	.3
	189	42.0	.1
	190	42.1	41.9
		42.5	.8
		41.5	.7
		41.0	.5
		41.0	.3
		41.1	.2
		41.2	.1
		41.1	.0
		41.8	40.9
		41.4	.8
		41.7	.7
		41.9	.5
	202	40.7	.4

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1930phae.proj..688A

	225	37.8	38.0
	226	38.3	37.9
	226.3	38.3	.8
	227	39.1	.7
λ	228	40.0	.5
	228.8	39.6	.4
	229	38.6	.4
	229.7	37.3	.3
	231	36.7	.1
	239.2	95.8	36.2
	240	36.9	.2
	240.5	38.0	.1
	241	39.6	.0
	241.5	41.5	.0
	242	43.3	.0
4002	242.4	43.8	35.9
	243	43.4	.9
	243.5	42.2	.8
	244	40.3	.8
	245	38.7	.7
	246	36.4	.6
	247	36.0	.4
	247.3	35.7	.3
	248.5	36.5	.2
	249.5	35.5	.1
	250	36.0	.0
	250.5	37.4	.0
	251	38.3	37.9
4005	251.8	40.4	.9
	252.5	38.7	.8
	253	37.6	.8

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1930phae.proj..6884

	253.5		36.4	.7
	254		34.9	.7
	255		34.4	.6
	268		33.1	33.2
	268.5		33.5	.1
	269		34.3	.1
	269.5		36.3	32.0
	270	100.9	39.5	32.0
4012	270.9		43.0	32.9
	271.5		40.0	.8
	272		36.7	.8
	272.5		34.1	.7
	273		33.3	.7
	273.8		32.1	.6
	275		32.6	.5
	276		32.8	.4
	277		32.1	.3
	277.5		32.4	.3
	278		33.4	.2
	278.5		34.9	.0
4015	279.2		36.2	.0
	280		35.0	31.9
	280.5		32.8	31.9
	281		32.3	.8
	282		31.3	.7
	299	101.0	30.0	30.1
	300		30.6	.0
	300.5		31.9	.0
	301		32.8	29.9
4023	301.8		33.5	.9
	302.9		32.2	.8

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	303.5	34.0	.8
	303.8	36.0	.7
4024	304.7	39.0	.7
	305	38.0	.6
	306.3	33.8	.5
	307.3	32.1	.4
	308	32.4	.3
λ	309	32.8	.3
	310	91.1	.2
	310.8	29.2	.2
	312	29.0	.1
	313	29.7	.0
	314	33.2	.0
4028	314.8	34.7	28.9
	315.5	32.8	.9
	316	31.0	.8
	317	29.6	.8
	318	28.8	.7
	325.7	28.3	28.1
	326.5	30.0	.0
	326.9	31.0	.0
	327	32.1	.0
4033	327.3	32.3	.0
	328	31.7	27.9
	329	28.5	.8
	330	27.3	.7

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μφ 4551 W 467 δ D. 005

	20.3	101.3	29.3	28.8
	21		24.9	.8
	21.4		31.0	.8
	21.6		32.3	.8
4033	22.1		33.1	.7
	22		32.2	.6
	22.5		29.5	.6
	24		28.8	.5
	25		28.0	.5
	26		28.1	.4
	27		28.5	.3
	27.5		28.8	.2
	28.8		29.0	.1
4035	29.7		30.3	.1
	30.5		29.5	.0
	31		28.3	.0
	31.5		27.9	.0
	51.6		26.2	26.2
	52		26.8	.1
	52.5		27.5	.1
	53		27.7	.1
4044	53.3		27.8	.0
	54		27.4	.0
	54.4		26.7	25.9
	55.3		26.2	.9
	56		27.0	.9
	57		30.0	.8
4046	57.8		32.1	.8
	58.5		30.5	.7
	59		28.5	.7
	60		25.8	.6

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	64	24.8	25.2
	65	26.4	.1
	66	28.8	.0
4048	66.2	28.9	.0
	67	27.9	24.9
	68	26	.8
	68.7	25.8	.7
	70	24.8	.6
	71	24.8	.5
	72	25.1	.4
	73	25.7	.3
	74	27.2	.2
4052	74.3	27.5	.2
	75	26.8	.1
	75.3	25.6	.1
	77	24.4	.0
	78	26.5	23.9
	79	29.6	.9
4053	79.3	29.8	.9
	80	28.9	.8
	81	26.6	.7
	82	23.7	.7
	87.2	23.5	23.2
	88	24.5	.2
4057	88.6	24.9	.1
	89	24.8	.1
	90	23.3	.0
	91	22.7	.0
	102.2	21.9	22.4
	103	22.6	.4
	104	25.7	.3

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4063	104.8	26.9	22.2
	105.5	25.8	.2
	106	24.2	.1
	106.8	23.2	.1
	107.3	23.3	.1
	108	23.0	.0
	109	23.0	.0
	110	22.0	.0
	111.2	22.0	21.9
	112	22.8	.9
	113	25.9	.8
4067	113.8	29.6	.8
	114.5	27.5	.8
	115	23.5	.7
	115.7	22.7	.7
	116.7	22.1	.6
	117.7	22.8	.6
	119	21.4	.5
	120	21.1	.4
	121	21.8	.3
	121.6	22.2	.3
	122.4	21.9	.3
	123	22.2	.2
	124	22.7	.2
	125	23.7	.1
4072	126.1	25.0	.0
	127	22.9	.0
	127.8	21.8	.0
	128.6	21.8	20.9
	129	21.4	.9
	130	21.0	.8
	131	20.9	.8

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	132		20820.7
			20.8 .7
			21.0 .6
	135		21.1 .5
			21.9 .4
			21.8 .3
			21.8 .2
			225 .2
	140		22.8 .1
			24.3 .1
to 27	141.4		24.8 .0
	142		23.8 .0
	143		21.0 .0
	144		20.1 19.9
	145		20.2 .9
			19.8 .8
			19.8 .8
			20.0 .7
			19.9 .7
	150	101.2	19.8 .6
			19.4 .6
			20.0 .5
			20.2 .5
			19.9 .4
	155		19.0 .4
			19.2 .3
			19.6 .3
			19.2 .3
			19.5 .2
	160		19.3 .2
			19.4 .1

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1930phae.proj..688A

162	19.6	.1
	19.7	.1
	19.4	.0
165	19.5	.0
	20.0	.0
	19.9	18.9
	19.1	.9
	19.3	.8
170	19.4	.8
	19.1	.8
	18.2	.7
	18.7	.7
	18.7	.6
175	18.5	.6
	18.4	.5
	18.6	.5
	18.6	.4
	19.0	.4
180	19.3	.3
	19.1	.3
	19.0	.2
	19.2	.2
	18.6	.2
185	18.4	.1
	18.4	
	19.1	.1
	19.1	.0
	19.2	.0
	19.1	.0
190	19.5	.0
190.4	19.3	-17.9
191	19.9	.9

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1930phae.proj...688A

	191.5	20.0 .9
	192	20.6 .9
	192.4	21.3 .9
	193	21.8 .8
	194	21.9 .8
	194.3	22.0 .8
	195.1	23.1 .8
	196.1	23.1 .8
	197	24.6 .7
	197.5	25.9 .7
	198.3	28.0 .7
	199	31.1 .7
	199.5	33.6 .7
	200	38.0 .6
	200.5	42.9 .6
	201	(50) .6
	201.5	60 .6
	202	70 .5
	202.5	72 .5
4101.	202.9	77.9 .5
	203.5	75.0 .4
	204	68 .4
	204.5	59 .4
	205	50 .4
	205.5	41.5 .3
	206	35.8 .3
	206.5	31.7 .3
	207	29.5 .3
	207.5	28.0 .3
	208	26.7 .2
	208.5	25.2 .2

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1930phae.proj..6884

	209	24.3 ~~23.3~~	.2
	209.5	23.6	.2
	210	22.9	.1
	211	21.8	.1
	211.7	20.9	.1
	2122	20.9	.1
	213	20.0	.0
	214	18.9	.0
	215	18.9	.0
	216	18.3	16.9
	216.8	18.8	.9
	218	17.8	.9
	219	17.9	.9
	220	17.9	.8
	221	17.6	.8
	222	18.2	.8
	223	18.5	.7
	224.2	18.0	.7
	225	18.6	.6
4/11	226	20.2	.6
	227	18.8	.5
	228	18.0	.5
	229	16.8	.4
	230	17.1	.4
		17.2	.3
		16.9	.3
		16.4	.3
		16.4	.2
		16.3	.2
		16.0	.1
	237	16.0	.1

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1930phae.proj..688

	238		15.9	.0
			16.2	.0
	240		16.2	.0
			15.8	15.9
			15.9	.9
			16.0	.8
			16.3	.8
			16.7	.7
			16.9	.7
	246.6		17.1	.7
	247		17.0	.7
			15.8	.6
			15.8	.6
	250	101.1	16.2	.6
	250.8		16.4	.5
	251.8		16.0	.5
	252.5		16.5	.5
	253		17.5	.4
	254		21.9	.4
4/22	254.3		22.2	.4
	255		20.8	.4
	256		16.7	.3
	256.6		15.6	.3
	258.3		15.6	.2
	259		16.0	.2
4/24	259.5		16.9	.2
	260		16.8	.2
	260.5		16.4	.1
	261		16.0	.1
	261.7		15.5	.1
	263		15.5	.1

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	264	15.4	.0
	265	15.8	.0
	265.5	15.8	.0
	266	16.3	.0
	266.5	18.5	.0
	267	23.7	.0
4128	267.7	28.2	.0
	268	27.3	14.9
	268.5	24.9	.9
	269	22.7	.9
	270	18.8	.9
	270.5	16.8	.9
	271	16.2	.8
	271.5	15.4	.8
	272.5	15.7	.8
	273	16.9	.8
	273.5	19.8	.8
	274	25	.7
4131	274.3	26.1	.7
	275	23.2	.7
	275.5	19.2	.7
	276	16.3	.7
	276.2	16.0	.6
	277	16.2	.6
4132	(277.6)	16.3	.6
	278	16.2	.6
	279	15.7	.6
	280	14.8	.5
	281	14.4	.5

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μΦ4552 W467 5 0.000

	18	101.4	52.0 57.9
			52.4 .8
			53.7 .7
	20.7		
4044	~~20.9~~		53.9 .7
	22		53.0 .6
			53.6 .5
	23.5		54.7 .4
	24		56.1 .3
	24.5		57.5 .3
4046	25.2		58.3 .2
	26		57.2 .1
	26.6		55.0 .1
	27		53.3 .0
	28		51.3 50.9
	29		50.5 .8
	30		50.7 .7
			51.3 .6
			52.9 .5
			53.1 .4
4048	33.5		50.4 .4
	34		55.2 .3
	35		52.9 .2
			50.6 .1
			50.0 .1
			50.2 .0
			50.7 .0
	40		51.4 49.9
			53.1 .8
	41.4		53.5 .7
	42		52.9 .7
	43		50.4 .6

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1930phae.proj..688A

	43.7	49.7	.5
	44.5	50.5	.4
	45	51.8	.3
	45.5	53.9	.3
	46	55.4	.2
4053	46.6	56.2	.2
	47	55.8	.1
	48	52.0	.0
	48.5	50.0	.0
	49	49.1	48.9
	50	49.0	.8
	66	47.4	47.3
		47.7	.2
		47.9	.1
		47.9	.0
	70	48.0	46.9
	71	49.3	.8
	71.5	50.5	.8
4063	72.2	51.2	.7
	73	49.8	.6
	73.8	47.8	.5
	75	47.1	.4
	77	47.5	.2
	78.5	46.2	.1
	79	46.7	.0
	79.5	47.9	.0
	80	48.7	45.9
	80.5	52.0	.9
4067	81.2	54.0	.8
	82	51.5	.7
	83	47.3	.6

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	83.5	46.1 .6
	84	45.4 .5
	85	45.1 .5
		44.9 .4
		44.8 .3
		45.2 .3
		46.6 .2
	89.4	46.8 .2
	90.2	46.9 .1
	91	47.3 .1
	91.5	47.5 .0
	92	48.1 .0
	93	49.2 44.9
4071	93.3	49.3 .9
	94	48.8 .9
		47.3 .8
		46.3 .8
		45.7 .7
		45.3 .7
		44.8 .6
	100	44.6 .5
		44.9 .4
		45.4 .3
		44.9 .2
	104.2	46.3 .2
	105.3	46.2 .1
	106	46.4 .1
		47.1 .0
		48.2 .0
	108.9	49.1 43.9
	110	47.7 .8

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1930phae.proj..688A

111	45.3	.7
112	43.7	.7
113	43.2	.6
	43.3	.5
	43.6	.5
	43.3	.4
	43.1	.3
	43.3	.2
	43.5	.2
120	43.5	.1
	43.8	.1
	43.9	.0
	43.2	.0
	42.9	42.9
125	43.1	.8
	43.3	.8
	42.7	.7
	42.7	.6
	43.2	.5
130	43.7	.4
130.9	44.0	.3
132.3	42.8	.3
134.7	43.3	.2
134.5	42.9	.2
135.7	42.0	.1
137	42.2	.0
	42.0	.0
	41.9	41.9
140	41.8	.8
	41.7	.7
	41.7	.7

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143	41.4 .6
	41.2 .5
	41.5 .4
	41.4 .4
	42.0 .3
	42.1 .3
149	42.1 .2
150.2	41.9 .1
151.3	42.2 .0
152	42.1 .0
	41.9 40.9
	41.7 .8
	41.7 .8
	41.9 ~~42.0~~ .7
156.3	42.1 .7
157.7	42.1 .6
158.5	42.5 .5
159	42.9 .5
160	44.0 .4
160.5	44.4 .4
161	44.8 .3
162	45.4 .3
163	46.2 .2
163.5	46.6 .2
164.3	47.8 .1
164.6	48.7 .1
165	49.5 .1
165.5	51.0 .1
166	51.8 .0
166.5	54.0 .0
167	55.8 .0

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1930phae.proj..6884

	167.5	58.6	.0
	168	61.8	39.9
	168.5	65.8	.9
	169	70	.9
	169.5	76	.8
	170	82	.8
	170.5	86.6	.8
	171	88.6	.7
4101.	171.2	88.9	.7
	172	86.6	.7
	172.5	82.4	.7
	173	76.5	.7
	173.5	69.8	.6
	174	64.9	.6
	174.5	61.0	.6
	175	58.3	.6
	175.5	56.0	.5
	176	54.0	.5
	176.5	52.0	.5
	177	50.6	.4
	177.5	49.1 ~~48.1~~	.4
	178	48.0	.3
	178.5	47.3	.3
	179	46.5	.3
	179.5	46.3	.2
	180	46.0	.2
	180.5	45.5	.1
	180.9	43.8	.1
	182	42.6	.0
	183	41.7	.0
	184	41.0	38.9

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	1855	40.8	.8
	1867	40.0	.7
	1875	39.6	.7
	1885	39.8	.6
	1895	39.8	.6
	1900	40.2	.5
	1914	41.4	.4
	1925	41.3	.3
	1933	41.6	.3
	1947	42.7	.2
4118	1953	42.8	.2
	1965	42.3	.1
	1976	40.0	.1
	1987	39.6	.0
	1998	39.0	.0
	1986	38.6	37.9
	2000	38.8	.9
		38.0	.8
		38.0	.8
		38.1	.7
		37.8	.6
	2055	37.1	.6
		36.9	.5
		37.0	.4
		37.0	1.4
		37.2	.3
	2110	37.2	.2
		37.0	.1
		37.3	.0
		37.3	.0
		37.2	36.9

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1930phae.proj..688A

	215	38.1	.9
	215.6	38.3	.8
	216	38.2	.8
	217.4	37.2	.7
	218.7	37.5	.7
	220	36.5	.6
	220.5	36.8	.6
	221	37.7	.5
	222	41.5	.4
	222.5	44.0	.4
4122	223.1	45.0	.3
	223.5	44.6	.3
	224	42.4	.3
	225	38.0	.2
	225.5	37.0	.2
	226.3	36.3	.1
	227.5	37.7	.1
4124-25	228.3	38.3	.0
	229	37.8	.0
	230	95.9	35.9
		35.7	.8
		36.1	.8
		36.7	.7
	233.5	37.0	.6
	234	37.8	.6
	234.5	40.0	.6
	235	44.3	.5
	235.5	48.0	.5
4128	236.3	52.2	.4
	237	50.2	.4
	237.5	48.0	.3

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	238	44.9	.3
	238.5	42.1	.3
	239	39.4	.2
	239.5	37.8	.2
	240.3	36.4	.2
	241	37.2	.1
	241.5	39.4	.1
	242	45.0	.1
	242.5	48.9	.0
4131	242.9	49.6	.0
	243.5	46.4	.0
	244	42.7	.0
	244.5	39.8	.0
	245	38.0	34.9
	245.3	37.7	.9
4132	246	37.7	.9
	247	36.7	.8
	248	35.7	.8
	249	35.2	.7
	250	35.4	.7
	256.4	34.5	.3
	257.3	35.0	.3
	258.5	34.9	.2
	259.5	35.3	.1
4138	260.4	36.1	.0
	261	35.1	.0
	262	34.2	.0
	270	33.3	33.6
	271	33.9	.5
	272	35.1	.4
	272.5	35.7	.4

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4143	273.2	37.0	.3
	274	36.1	.3
	275	34.5	.2
	275.7	34.1	.2
	276.5	34.8	.1
	277.5	36.3	.1
4146	278.3	37.0	.0
	279	35.6	.0
	280.4	33.5	.0
	311.3	31.3	31.2
	312	31.8	.1
		33.1	.1
4161		33.7	.0
		33.8	.0
	316	32.2	32.9
	316.5	31.8	.9
	317.9	31.8	.8
	318.5	33.7	.7
	319	36.1	.6
4163	319.9	38.8	.5
	320.5	37.0	.5
	321	34.5	.4
	322	31.1	.4
	323	31.0	.3
	335	30.1	29.9
	336	30.3	.8
		31.2	.8
		33.4	.7
4172	339.1	37.2	.7
	340.2	34.3	.6
	341	37.5	.5

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	341.5	42.0 ~~37~~	.5
	342	47.9	.4
4173	342.4	49.4	.4
	343	46	.4 ~~.8~~
	343.5	41	.3
	344	35.8	.3
	344.5	33.3	.3
	345	31.7	.2
	346	29.9	.2
	347	29.6	.2
	348	29.9	.1
	349	29.9	.1
	350.3	30.7	.0
	351	32.8	.0
	351.5	35.5	28.9
4177	352.4	39.1	.9
	353.1	38.9	.9
	353.5	39.0	.8
	354	43.5	.8
	354.5	48.9	.8
4179	355	50.8	.8
defect	355.4	48.8	.7
	356.5	39.0	.7
	357	34.5	.7
	357.5	31.1	.6
	358.3	28.8	.6

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184 αΦ 4553 W 467 f-δ D.005

4131	7.6			
4132	10.8			
	24.3	101.3	58.3	58.5
	25		59.7	.4
4138	25.4		60.7	.4
	26		59.8	.3
	27		58.2	.3
	35.3		57.3	57.8
	36.2		59.2	.7
	36.9 ~~37~~		58.9	.7
4143	38.1		60.9	.6
	~~39~~ ~~38~~		60.3	.5
	40		56.9	.4
	41		58.7	.3
	42		60.1	.3
	42.5		60.6	.2
4146	43.2		60.~~5~~	.1
	44		59.4	.1
	45		58.0	.0
	46		57.5	.0
	77.5	101.2	55.0	54.9
	78		55.8	.8
	78.6		57.3	.8
	79.1		56.8	.7
4161	80.1		57.9	.6
	81		57.0	.5
	82		56.7	.4
	82.4		55.1	.4
	83		55.8	.4
	84		58.0	.3
	85		62.4	.2

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	85.3		
	~~86~~		63.1 .2
	86		60.8 .1
	87		55.6 .0
	87.4		54.2 .0
	~~87.4~~		
	100	101-1	53.6 53.2
	101		53.9 .1
	102		54.5 .0
	102.7		54.6 32.9
	103.5		57.1 .9
	104		59.6 .8
4172	104.6		60.4 .8
	105		60.3 .7
	106.1		56.4 .6
	107		61.8 .6
	107.5		68.3 .5
4173	108.2		72.4 .5
	109		64.5 .4
	109.0		59.0 .4
	110.7		53.7 .3
	112		53.4 .2
	113		52.8 .1
	113.8		
	~~114~~		50.0 .0
	114.7		52.8 .0
	115.3		52.5 51.9
	116		53.7 .9
	116.5		57.0 .8
	117		60.5 .8
4177	117.7		63.7 .7
	118.7		61.2 .7
	119.5		68.0 .6
4179	120.1		74.8 .6

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	120.5	74.4	51.5
	121	72	.4
	121.5	66.6	.4
	122	62	.3
	123	54.0	.3
	124	52.0	.2
	125	51.3	.2
	126	51.0	.1
	137.5	50.0	50.1
	138.5	51.1	.0
	139.3	51.3	49.9
	140	52.7	49.9
4188	140.3	53.4	.8
	141	53.5	.8
	142	50.8	.7
	143	49.0	.7
	157	48.4	48.5
	158	50.3	.4
λ -	158.3	50.6	.3
	159	50.1	.3
	160.2	48.3	.2
	164.8	48.0	47.9
	165.5	49.3	.8
4198	166.7	50.2	.7
	167.5	49.0	.6
	168.7	47.1	.6
	170	48.0	.4
	171	46.9	.3
	172.1	47.3	.2
	173	49.4	.1
	173.5	49.5	.1

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4202	174			52.0	.0
	175.8			47.5	46.9
	176			47.7	.9
	177			46.4	.8
	178			47.0	.7
	178.7			46.3	.6
	179.3			48.1	.5
4205	180.2			49.5	.4
	181.6			48.0	.3
	182.6			48.6	.2
	184			46.1	.1
	201		101.0	44.4	44.7
	201.5			45.5	.7
	202			47.0	.6
4215	202.9			49.7	.5
	203.5			48.0	.4
	204.2			45.7	.3
	205			45.2	.3
	205.7			43.8	.2
	202			43.4	43.9
	223			45.1	.8
4224	223.7			46.0	.7
	224.2			45.0	.6
	225			44.2	.6
	225.8			42.8	.5
	226.8			43.6	.4
	227.3			43.8	.3
4227	228.3			45.0	.2
	228.7			44.8	.2
	229.3			44.7	.1
	230			42.1	.1

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	238	41.2	41.4
	238.5	42.1	.4
	239	43.8	.3
	239.5	47.9	.3
	240	(58)	.3
	240.5	66	.2
4233	241	71.5	.2
	241.5	66	.1
	242	58	.1
	242.5	48.0	.0
	243	43.5	.0
	243.8	41.0	40.9
	245	40.9	.9
	246	42.1	.8
4235	246.4	42.3	.7
	247	41.6	.7
	248	40.1	.6
	257.4	39.3	39.8
	258	40.2	.8
	258.5	41.0	.8
	259	42.4	.7
	259.5	45	.6
	260	50	.6
4242	260.4	51.2	.5
	261	47.8	.5
	261.5	43.1	.4
	262	40.7	.4
	262.5	39.5	.3
	268	39.4	39.0
	268.5	41.3	.0
	269	45.0	38.9

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4247	269.7	48.1	.9
	270.5	43.9	.8
	271.7	38.7	.7
	273	38.6	.6
	274	37.8	.6
	275	38.4	.5
	275.8	38.8	.4
4251	276.3	40.3	.4
	277.2	40.3	.3
	278	39.6	.3
	278.6	38.7	.2
	280.4	38.9	.1
	281	40.0	.0
4253	281.8	42.0	.0 37.9
	282.5	41.0	37.9
	283.3	38.3	.9
	284	38.6	.8
	284.3	38.3	.8
4254	285.4	39.0	.7
	286	38.3	.7
	287	36.7	.6
	291	37.3	.3
	291.5	38.0	.3
	292	40.2	.2
4258	292.8	44.6	.2
	293.5	42.9	.1
	294	40.0	.0
	294.5	39.0	.0
	295.5	37.2	.0
	296.5	37.2	36.9
deflect	297.3	39.2	.9

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	298.6	37.7	.8
	299.5	39.0	.7
	300	43	.7
4262	300.4	45.3	.6
	301	43	.6
	301.5	40.0	.5
	302	37.8	.5
	303	36.0	.4
	314	35.7	35.7
	315	36.7	.6
4269	315.8	38.2	.4
	316.5	36.7	.4
	317	35.7	.3
	318	34.8	.3
	319	35.3	.2
	320	38.2	.1
4271	320.7	39.2	.1
	321.5	37.4	.0
	322.4	35.3	.0
	323	37.8	~~34.9~~ .0
	323.5	41.4	34.9
4273	324.1	42.9	.9
	325	38.0	.8
	325.5	35.9	.8
	326.5	35.0	.7
	327	35.6	.6
	328	38.9	.5
4275	328.7	41.2	.5
	329.5	38.4	.4
	330.2	100.9 34.3	.3
	332.1	34.2	.3

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1930phae.proj..688A

	333	36.1	.1
4278	334	38.2	.1
	335	35.2	.0
	336	34.7	.0
	337	33.9	33.9
	341	33.0	33.5
	341.5	34.6	.5
4282	342.4	95.1	.4
	343	34.4	.3
	344	33.9	.2
	344.3	33.6	.1
	345	34.8	.1
	345.5	37.0	.1
4284	345.9	37.7	.0
	346.5	36.5	.0
	347	35.0	.0
	347.9	33.3	.0
4286	349	33.8	32.9
	350.2	34.2	.8
	351.5	32.8	.7
	352.5	34.1	.7
4288	353.1	35.2	.6
	354	33.9	.5
	354.8	32.9	.4
4290	358.0		
4294	365.5		
4296	370.3		
4300	377.1		

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1930phae.proj..6884

192 μ Φ 4554 W467 γ 0.007

	11	100.8	19.0	18.9
	12		22.3	.8
	12.5		25.5	.8
4290	13.1		28.2	.8
	13.5		26.0	.7
	14		22.0	.7
	15		18.3	.7
			18.4	.6
			18.9	.6
			18.8	.5
			18.9	.5
	19.5		20.1	.5
	20		24	.4
4294	20.7		27.7	4
	21.5		23.0	.3
	22.5		19.2	.3
	23.5		18.7	.3
	24		19.6	.2
	24.5		22.4	.2
4296	25.4		28.8	.2
	26		26.0	.2
	27		19.3	.2
	28		17.8	.1
	29		17.7	.1
	30		18.3	.1
	31		21.4	.0
	31.5		26.0	.0
4300	32.2		31.2	.0
	33		25.8	.0
	34		19.3	17.9
	34.5		18.5	.9

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1930phae.proj..688

	35	100.7	19.0 .9
4302	36.2		23.3 .8
	36.9		22.4 .8
	37.5		25.5 .8
4303	38.2		34.2 .8
	39		28.0 .7
	40		18.8 .7
	41		17.0 .7
			17.3 .6
			17.4 .6
			17.0 .5
	45		17.0 .5
X	45.8		18.9 .4
	46.5		20.8 .4
4308	47.3		24.7 .3
	48		22.6 .3
	49		17.8 .3
	50		17.0 .2
	52.53		17.0 .0
	56		18.4 .0
	57		22.4 .0
4313	57.4		23.4 .0
	58		21.5 .0
	58.5		19.8 .0
	59		20.6 .0
	59.5 60		24.0 .0
4315	60.2		25.8 .0
	61		25 16.9
	61.5		23.0 .9
	62		20.7 .9
	63		17.7 .9

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	64	17.1	.8
	65.2	17.7	.8
	66	17.0	.8
	67	16.6	.7
	68	16.7	.7
(4319)	69.5	17.3	.7
	71	100.6 17.0	.6
	72	19.0	.6
4321	72.7	20.3	.6
	73.5	18.5	.5
	74	17.5	.5
	75	16.1	.5
		16.3	.5
		15.9	.4
		16.0	.4
		16.2	.4
	80	17.7	.3
		20.0	.3
4326	82	21.0	.3
	83	17.8	.2
		17.0	.2
	85	16.7	.2
		16.4	.1
		15.6	.1
		16.0	.1
	89.4	16.0	.1
	90	17.0	.1
4330	90.9	17.7	.0
	92	17.0	.0
	92.7	16.3	.0
	94	16.7	.0

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	95	16.2	15.9 ~~.9~~
	96.2	16.2	.9
	97	15.9	.9
	97.8	16.4	.9
	98.4	16.4	~~.9~~ .8
	99	17.0	~~9~~ .8
	100.4	100.5 17.0	.8
	101	17.4	.8
	102.1	18.2	.8
	102.6	18.1	.8
	103.5	20.1	.8
	104	22.6	.8
	104.5	26.0	.7
4338	105.3	30.1	.7
	106.1	38.6	.7
	107	30.8	.7
	107.5	35	.7
	108	45	.7
	108.5	56	.7
	109	64	.7
4340	109.7	69.8	.7
	110	67	.7
	110.5	59.5	.6
	111	50.5	.6
	111.5	40.5	.6
	112	32.5	.6
	112.5	28.1	.6
	113	25.9	.6
	113.5	23.9	.6
	114	22.7	.6
	114.5	22.1	.6

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1930phae.proj..688A

	115	100.4	21.5	.6
	1155		21.6	.5
4344	1162		21.6	.5
	117		20.5	.5
	117.5		19.8	.5
	118		18.3	.5
	119		17.0	.5
	120		16.0	.5
			16.0	.4
			~~16.0~~	.4
			15.9	.4
			15.8	.4
			15.9	.4
	125		15.7	.4
			15.7	.3
			15.3	.3
	127.7		15.3	.3
	128.5		16.3	.3
	129		17.4	.3
	~~129.5~~ ~~130~~		20.0	.3
	130		(21)	.3
4351	130.8		34.7	.3
	131.5		28.5	.3
	132		22.0	.3
	133		16.3	.2
			15.3	.2
	135		15.5	.2
4354	136.1		16.1	.2
	137		15.1	.2
			15.1	.2
	139		15.3	.2

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	140		15.2	.1
			16.0	.1
4357	141.6		16.8	.1
	142.7		15.7	.1
	144		15.0	.1
	145		15.0	.1
	147		15.0	.0
	148.1		16.0	.0
	149		16.0	.0
4362	149.8		16.8	.0
	150.8		15.3	.0
	152		14.9	.0
	187	100.3	14.5	14.3
	188		15.7	.3
	188.5		17.0	.3
	189.7		20.3	.3
	190		20.8	.3
	190.7		22.4	.2
	191.3		22.7	.2
4385	192.2		27.1	.2
	193		23.8	.2
	194		16.0	.2
	195.2		16.1	.1
	196.2		14.9	.1
4395	210.1			
4417	249.1			
	354	100.0	10.0	10.1
	354.5		10.3	10.1
	355		11.5	.0
	355.5		16.0	.0
	356		25	.0

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1930phae.proj..6884

4481	356.7	37.0	.0
	357	(32)	.0
	357.5	23	.0
	358	16	.0
	358.5	11.9	.0
	359	10.6	.0
	360	10	9.9
	361	9.9	.9

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1930phae.proj..688A

μ Ø 4555 W467 δ 0.007

	17	102.5	53.3	53.4
			55.0	.3
			63	.2
4290	19.4		65.7	.2
	20		62	.1
	21		54	.0
	21.8		52.9	.0
	25		52.9	52.7
	26		56.8	.6
4294	27.1		63.8	.5
	28		57.3	.4
	29		52.5	.3
	30		53.2	.2
	31		59	.1
4296	31.9		65.7	.0
	33		57	51.9
	34		52.3	.9
	35		52.3	.8
	36		52.0	.7
	37		54	.6
	38		63	.5
4300	38.7		68.5	.4
	39.5		63	.3
	40.8	102.4	52.8	.2
	42		57.2	.1
4302	42.8		58.8	.0
	43.2		58.7	.0
	44 45		63	50.9
4303	44.9		70.3	.8
	45.5		64.9	.8
	46		58.5	.8

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1930phae.proj..6884

	47	50.3	.7
	~~48~~	50.3	.6
4306	48.8	51.7	.6
	49.7	51.7	.5
4307	50.0	52.2 ~~50.8~~	.5
	51	50.8	.4
	5~~1~~2	52.0	.4
	53	55.3	.3
4308	53.9 ~~54~~	60.6	.3
	55	55.4	.2
	56	52.0	.2
	56.6	50.7	.1
	57.2	50.8	.1
	58.5	52.0	.1
	59	50.3	.0
	~~59~~.4 ~~60~~	50.0	.0
	60.2	50.9	.0
	61.1	49.9	.0
	62	51.0	.0
	63	55.0 49.9	
4313	63.9	58.7	.9
	64.5	57.7	.9
	65.2	55.9	.8
	66	58.0	.8
	66.1	60.1	.8
4315	66.8	67.5	.7
	67.5	61.0	.7
	68	60.0	.7
	69	52.8	.6
	69.5	50.7	.6
	70	505	.6

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	71	102.3	50.2	.5
	72		49.9	.4
	72.5		49.3	.4
	73		50.0	.4
	74		50.4	.3
	75		48.7	.3
4319	76.3		51.4	.2
	77.1		50.0	.1
	78.5		51.6	.1
	78.5		52.8	.1
4321	79.4		54.8	.0
	80		53.4	.0
	81		50.0	48.9
	82		49.1	.9
	83		48.9	.8
	84		48.0	.8
	85		48.6	.8
	86		50.0	.7
	87		52.8	.7
	87.5		55.0	.7
4326	88.5		57.0	.7
	89		56.0	.6
	89.5		53.0	.6
	90		51.4	.6
	90.5		50.6	.6
	91		50.0	.6
	92		48.7	.6
			48.7	.5
			49.1	.5
			49.1	.4
	95.8		48.8	.4

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	96.5	49.4	.4
	97	50.7	.3
4330	97.6	51.7	.3
	98.5	50.0	.3
	99	49.0	.3
	100	50.1	.3
	100.5	50.3	.3
	101	50.0	.3
	101.8	48.4	.2
	102.4	48.8	.2
	103.8	48.0	.2
	104.8	49.9	.2
	105.4	49.8	.1
	106	50.0	.1
	106.5	50.3	.1
	107.3	50.7	.1
	108	51.6	.0
	109	53.0	.0
	110	55.7	.0
	110.5	56.8	.0
	111	61.0	.0
	111.5	65.0	.0
4338	112.1	67.0	.0
	112.9	65.9	47.9
	113.5	68.5	.9
	114	71.7	.9
	114.5	75.0	.9
	115	81	.9
	115.5	87.7	.9
	116	90.6	.8
4340	116.4	91.6	.8

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	117	888 .8
	117.5	84.6 .8
	118	80 .8
	118.5	74.4 .8
	119	68 .8
	119.5	64.0 .8
	120	61.3 .7
	120.5	59.6 .7
	121	59.0 .7
	121.3	58.0 .7
	122.2	57.2 .7
4344	122.8	57.6 .7
	123.5	56.5 .7
	124	55.6 .7
	~~125~~ 124.9	52.4 .6
	125.6	52.3 .6
	126	51.6 .6
	127	50.0 .6
	128.3	48.9 .5
	129	48.0 .5
	130.2	49.2 .5
	131	48.7 .4
	132	48.7 .4
	133	48.4 .4
	134.2	48.0 .4
	134.9	48.3 .3
	135.5	50.5 .3
	136	53.6 .3
	136.5	58.8 .3
	137.	66 .2
4351	137.6	70.8 .2

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	138	68	.2
	138.5	61	.2
	139	54.5	.2
	139.5	50.0	.2
	140	48.8	.1
	141	48.2	.1
	141.5	48.3	.1
	142	49.0	.1
4354	142.6	49.6	.1
	143	48.2	.0
	143.9	46.16	.0
	144.6	46.8	.0
	145.2	46.1	.0
	146	46.7	.0
	147	47.0	46.9
	148	49.0	.9
4357	148.7	50.2	.9
	149.5	49.2	.9
	150	48.0	.9
	150.4	46.6	.9
	151.5	46.6	.8
	152.2	47.0	.8
	153.2	45.5	.8
	154	47.0	.8
	154.8	48.4	.8
4362	155.5	48.4	.7
	156.8	48.4	.7
	157.7	47.7	.7
	159	47.7	.7
	160	46.3	.6
	161	45.8	.6

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	162		46.3	.5
			47.6	.5
			47.2	.5
	164.6 ~~165~~		46.8	.4
	165.4	102.1	46.8	.4
	166		47.7	.4
	166.5		50.0	.4
4367	167.1		50.7	.4 .3
	168		49.0	.3
	168.7		47.5	.3
	169.5		49.8	.3
4369	170.2		51.7	.3
	171		48.8	.3
	172		47.0	.2
	172.6		46.1	.2
	178		46.0	.2
	179		47.7	.1
4374	180.2		50.0	.1
	181		47.2	.1
	181.5		45.9	.1
	193	102.0	45.8	46.0
	194		46.6	45.9
	194.5		47.0	.9
	195		48.3	.9
	195.5		52.8	.9
	196		54.4	.9
	196.5		55.9	.8
4383	197		57.1	.8
	197.4		57.2	.8
	198		58.3	.8
	198.5		62.3	.8

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4385	199.1	64.7	.7
	199.5	63	.7
	200	57	.7
	200.5	51	.7
	201	49.1	.7
	201.8	50.0	.7
	202.5	48.1	.7
	203.4	46.8	.7
	204.2	47.7	.6
	205	46.5	.6
	206	48.7	.6
	207	46.3	.6
	207.5	47.1	.6
	208	48.8	.6
	208.5	50.7	.5
4391	209.1	51.3	.5
	210	48.5	.5
	211	45.8	.5
	212.1	46.3	.4
	213	45.9	.4
	214	46.3	.4
	215	48.8	.4
	215.5	51	.4
	216	54.5	.3
	216.5	59.5	.3
4395	217	62.2	.3
	217.5	59.4	.3
	218	54.5	.3
	219	48.9	.2
	220	45.0	.2
	221	44.8	.2

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	222	45.1	.2
	223	45.3	.1
	224	46.2	.1
	225	49.6	.1
4399	225.8	52.6	.0
	226.5	51	.0
	227	48.1	.0
	228	45.9	.0
	229	45.3	44.9
	230	45.0	.9
	231	46.0	.8
4402	231.5	46.1	.8
	232	45.7	.8
	233	45.3	.7
	234	47.6	.7
4404	234.4	48.4	.6
	235	47.3	.6
	235.9	44.8	.6
	237	45.0	.5
	240	44.3	.3
		44.7	.3
		45.2	.3
	242.8	46.6	.3
	244	45.1	.2
	245	47.0	.2
4411	245.8	48.8	.2
	246.5	46.1	.1
	247	45.0	.1
	248	44.2	.1
	249	45.5	.0
	249.5	46.7	.0
4413	250.1	47.0	.0

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	251	46.0	.0
	251.4	45.3	43.9
	252	46.6	.9
4415	253.2	47.8	.9
	253.9	46.8	.8
	254.5	50.1	.8
	255	56.5	.8
4417	255.8	62.5	.8
	256.5	58.0	.7
	257	55.8	.7
	257.5	53.7	.7
	258	50.5	.7
	259	45.4	.7
	260	44.7	.6
	261	44.8	.6
	262	43.9	.6
	263	44.3	.5
	263.8	44.2	.4
4422	264.7	45.6	.4
	265.8	43.2	.3
	271	43.2	.1
	272	43.7	.0
	272.7	44.1	.0
	273	44.0	42.9
	274	44.9	.9
4428	274.5	44.8	.9
	275.4	45.0	.8
	276	44.4	.8
	277	42.4	.8
	283.5	43.0	.4
4434	285.1	44.7	.3

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	286.1	42.5	.3
	299.7	41.9	41.6
	300	42.7	.5
	300.5	44.1	.4
	301	48	.4
4444	301.8	54.8	.3
	302.5	51.2	.3
	303	47.0	.2
	303.5	43.9	.2
	304.5	41.1	.1
	311	40.3	40.1
	311.5	41.0	.4
	312	42.4	.4
4450	313.2	46.5	.3
	314.1	44.0	.3
~~4455~~	315	44.3	.3
	316	42.3	.2
	317	39.9	.2
	319.5	39.6	.1
	320	41.0	.1
4455	320.8	42.7	39.9
	321.7	41.2	.9
	322	41.2	.8
	323	40.0	.7
	329.9	39.0	.0
	330.5	40.5	.0
4461	331.4	43.0	38.9
	332	41.5	.9
	332.5	39.0	.8
	333	38.3	.8
	334	39.1	.7

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	334.3	49.2	.7
	335	50.0	.7
4464	335.9	41.3	.6
	336.5	41.0	.5
	337.5	38.9	.4
	340.5	38.1	.2
	341	38.7	.1
	342	46.5	.0
4468	342.8	50.7	.0
	343.5	46.8	37.9
	344	41	.9
	345.1		
	~~344.5~~	38.7	.8
	346	39.6	.7
	346.5	40.4 ~~50.4~~	.6
	347	41.8	.6
4471	347.7	43.3	.5
	348.8	39.7	.4
4473	350	42.6	.3
	351	39.0	.2
	352	37.9	.1
	353	37.0	.0
	360	36.6	36.3
	361	36.7	.2
	361.5	37.6	.1
	362	41	.1
	362.5	47.5	.0
	363	(60)	.0
4481	363.7	71.5	.0
	364.5	55	35.9
	365	45	.9
	365.5	38.7	.8

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	366	36.8	.8
	367	35.7	.7
	373.2	34.6	34.9
	374	36.0	.8
	375	40.6	.7
	375.5	42.9	.7
	376	44.4	.6
4491	376.5	46.1	.6
	377	42.8	.5
	377.5	38.8	.4
	378.2	36.1	.3
	379	38.9	.3
	379.5	44.1	.3
4501	380	46.8	.2
	380.5	44.5	.2
	381	39.0	.1
	382	34.3	.0
	9931	33.4	32.7
	394	33.4	.6
	394.5	35.4	.6
	395	38.3	.5
4508	395.8	43.0	.3
	396.5	39.5	.3
	397	35.5	.2
	398	32.7	.1
	399	32.2	.0

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					0.002				2.004				0.003			
u	u_0	u/u_0	H	log T	u_0	u/u_0	H	log T	u_0	u/u_0	H	log T	u_0	u/u_0	H	log T
5			-				-		103.3		8.7		102.8		20.6	
10			-				-				17.0				28.7	
			-		103.3	~~1033~~	8.0		103.4		22.2				~~33~~.8	
20			-				11.4				26.6				37.6	
			-				15.3				30.0		102.9		40.8	
30			-				18.8				33.3				43.5	
			-				21.7		103.5		35.6				46.3	
40			-				23.8				38.3				48.9	
			-				26.3				40.5				51.0	
50			-				28.9				42.7				52.7	
	104.6		~~5.8~~				31.2				45.1				55.1	
60			7.8				33.7		103.6		47.4				57.5	
			9.8				35.7				49.6		103.0		59.9	
70			11.8				38.0				51.8				62.2	
			14.8				41.0				54.4				64.9	
80			17.8				44.0				57.8				67.7	
			20.4				47.1		103.7		61.4				71.4	
90			24.1		103.4		51.0				65.3				76.0	
			29.0				56.6				71.0				82.9	
100			36.3				67		103.8		83.0				—	
H_0			(102)				102.0				102.6				102.0	

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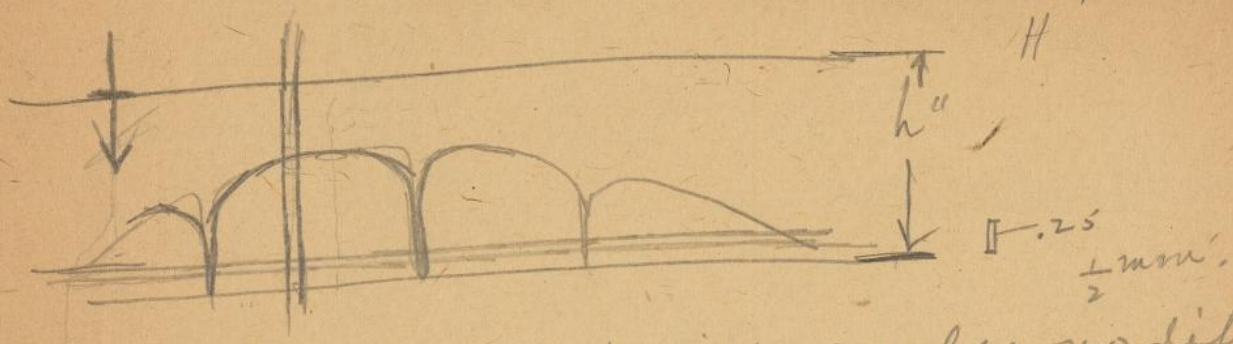
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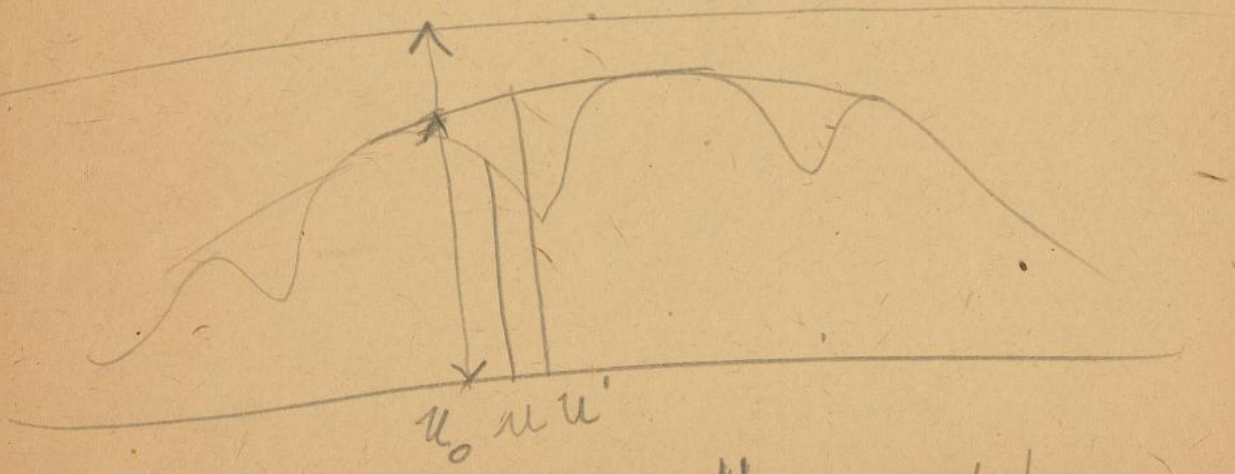


Char. curve – height makes no diff. but what about width ? ~~Any point in increasing~~

Speed – get the drum tightened on one on each side ??

Constant ?

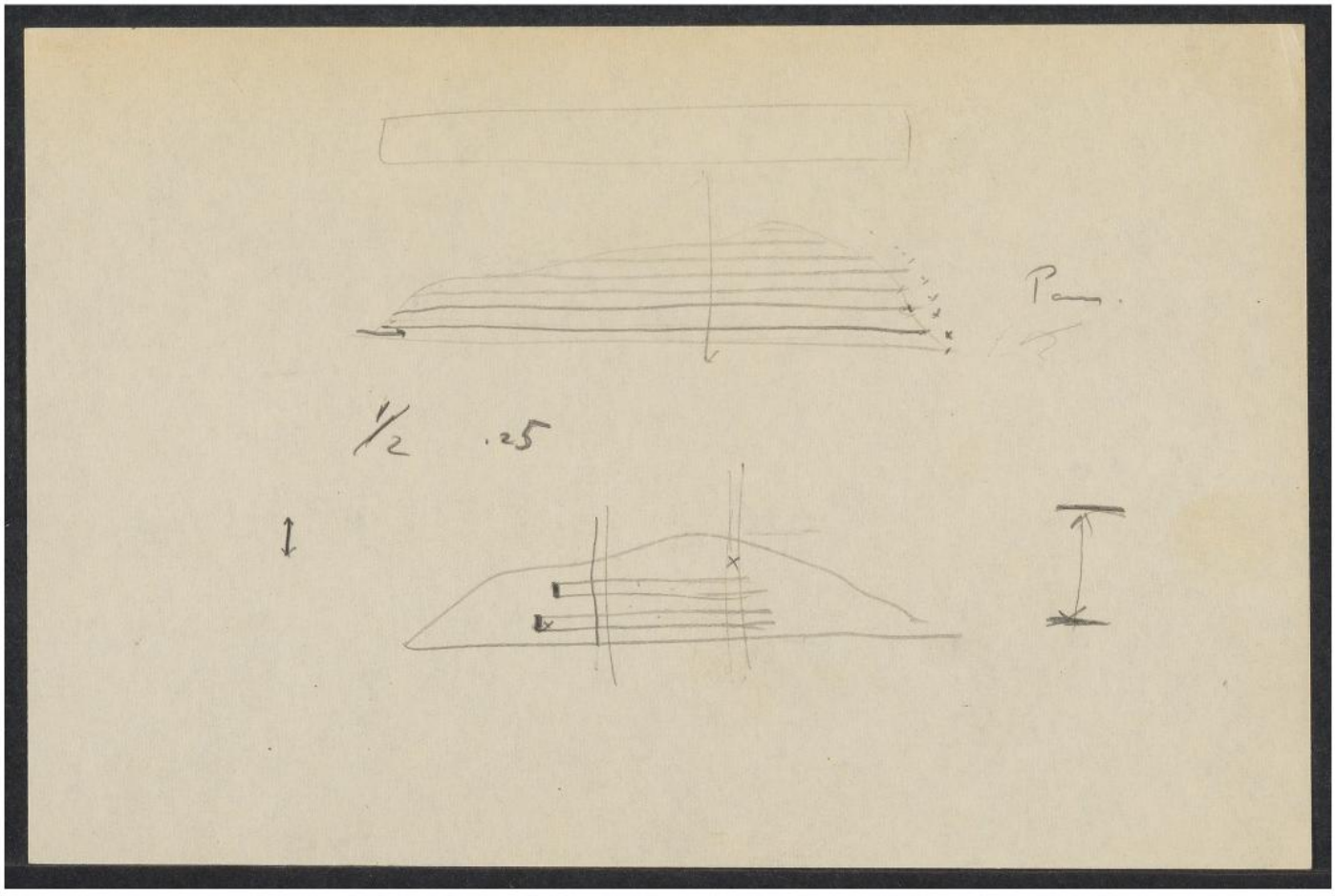
No reason for two char. curves for the two traces on each plate –



Measure $x + x_0$ – get H – get h – get T.

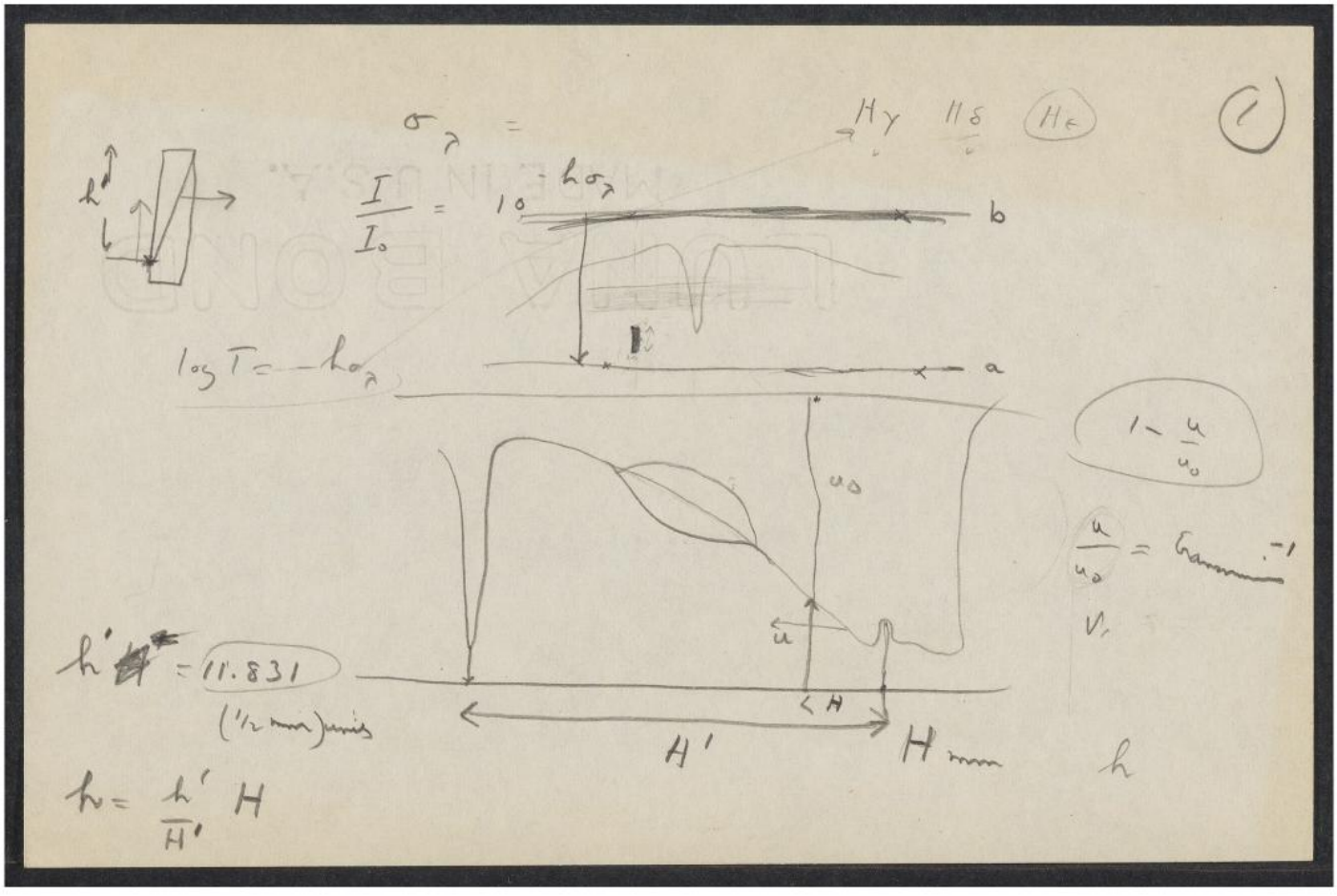
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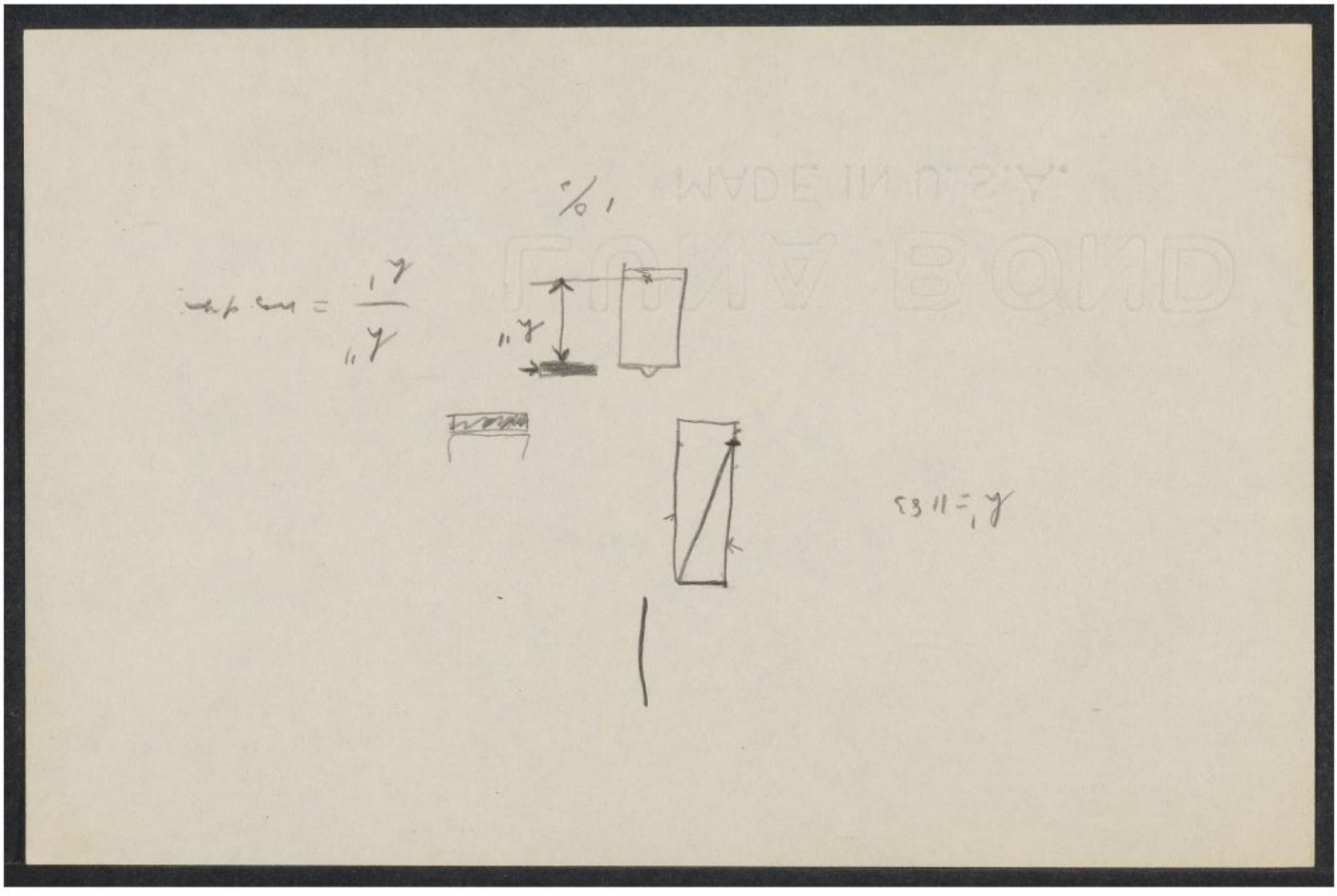
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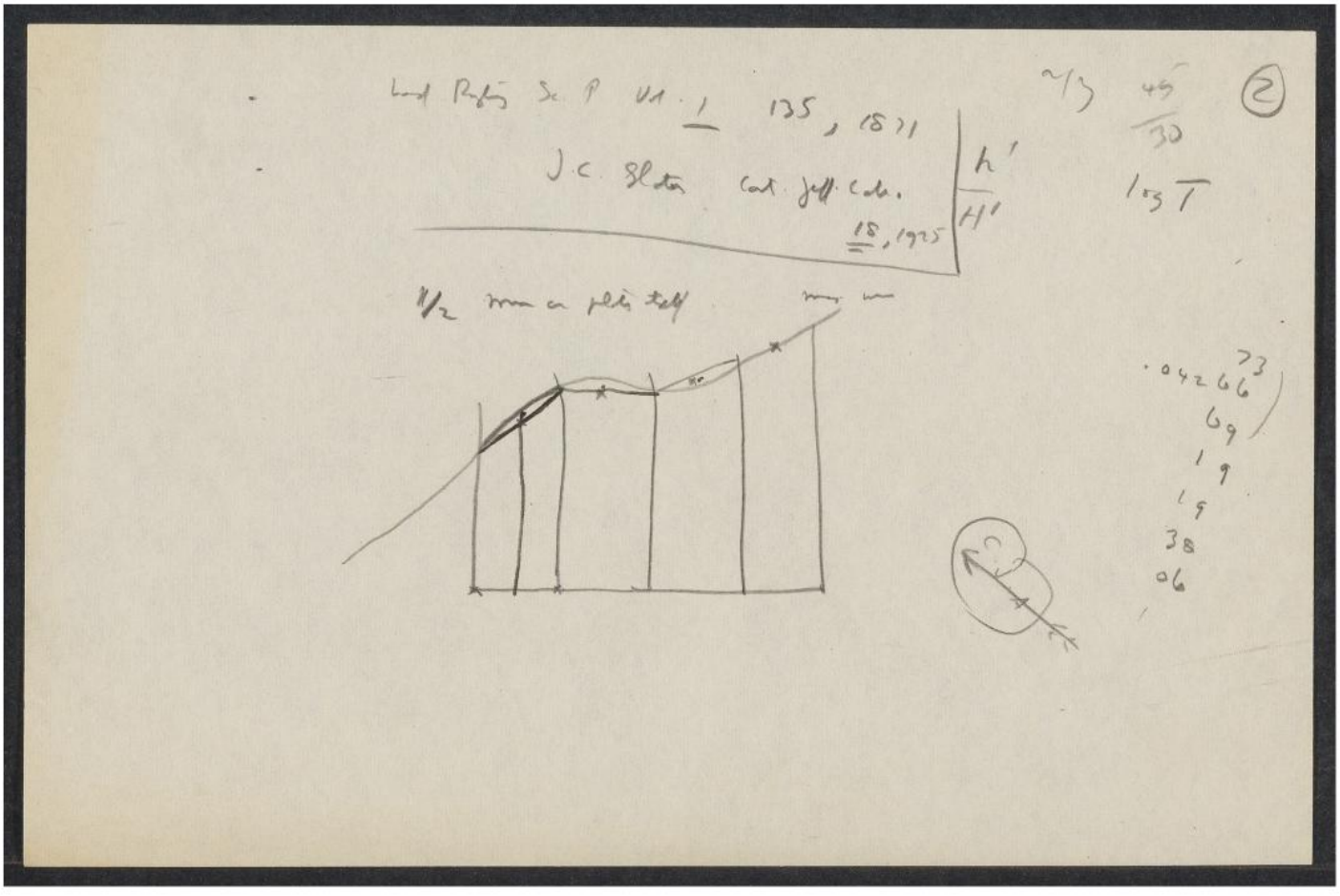
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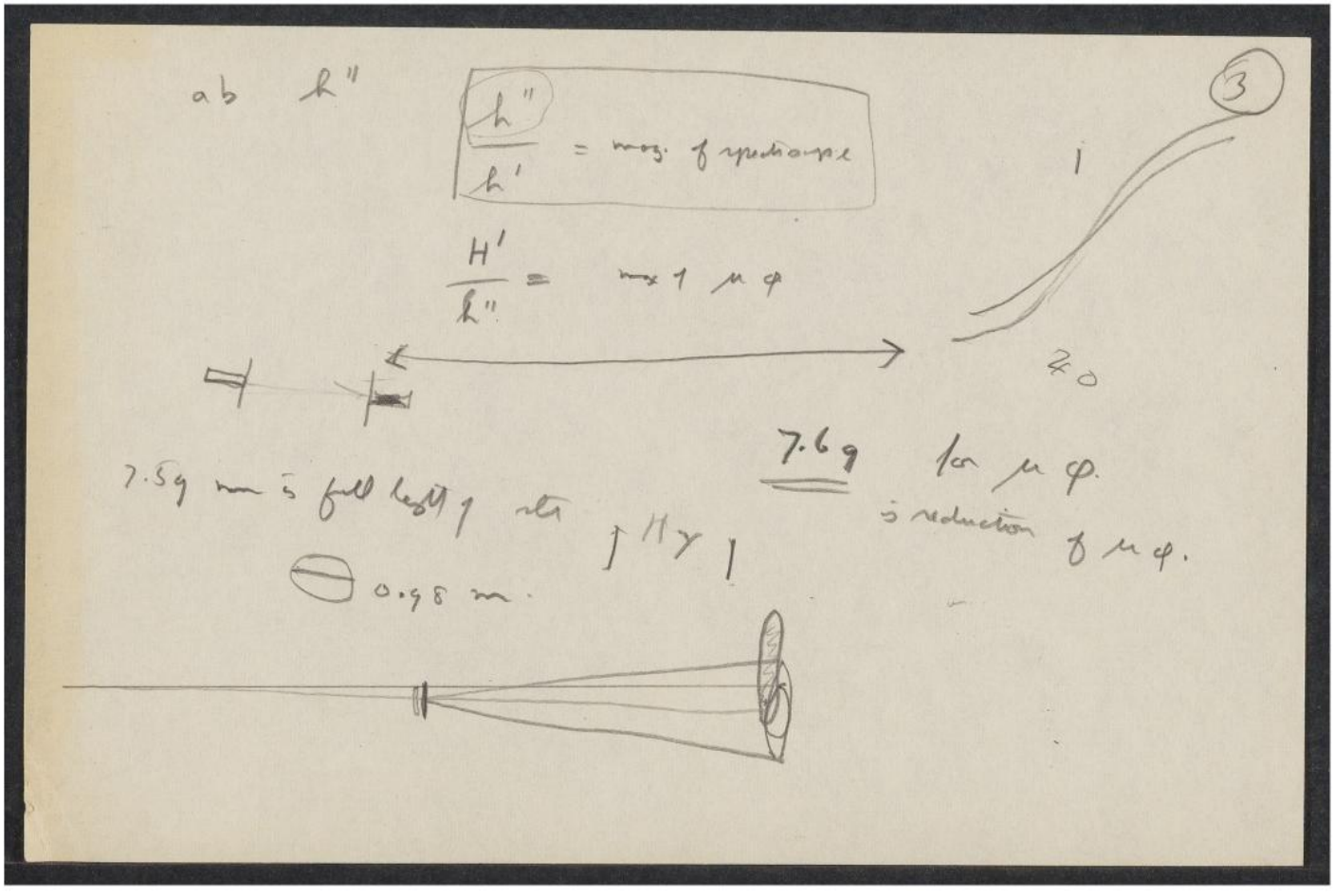
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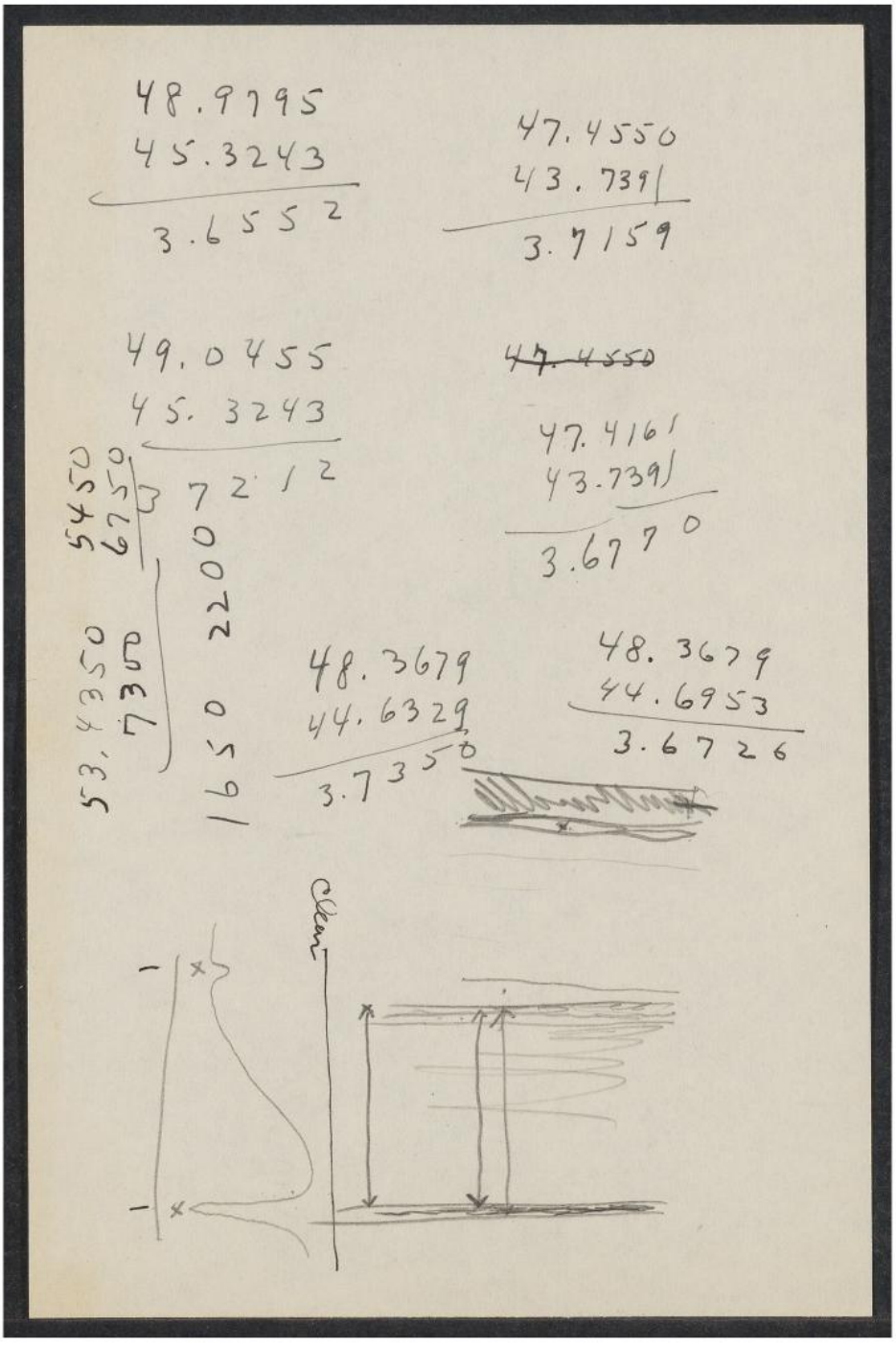
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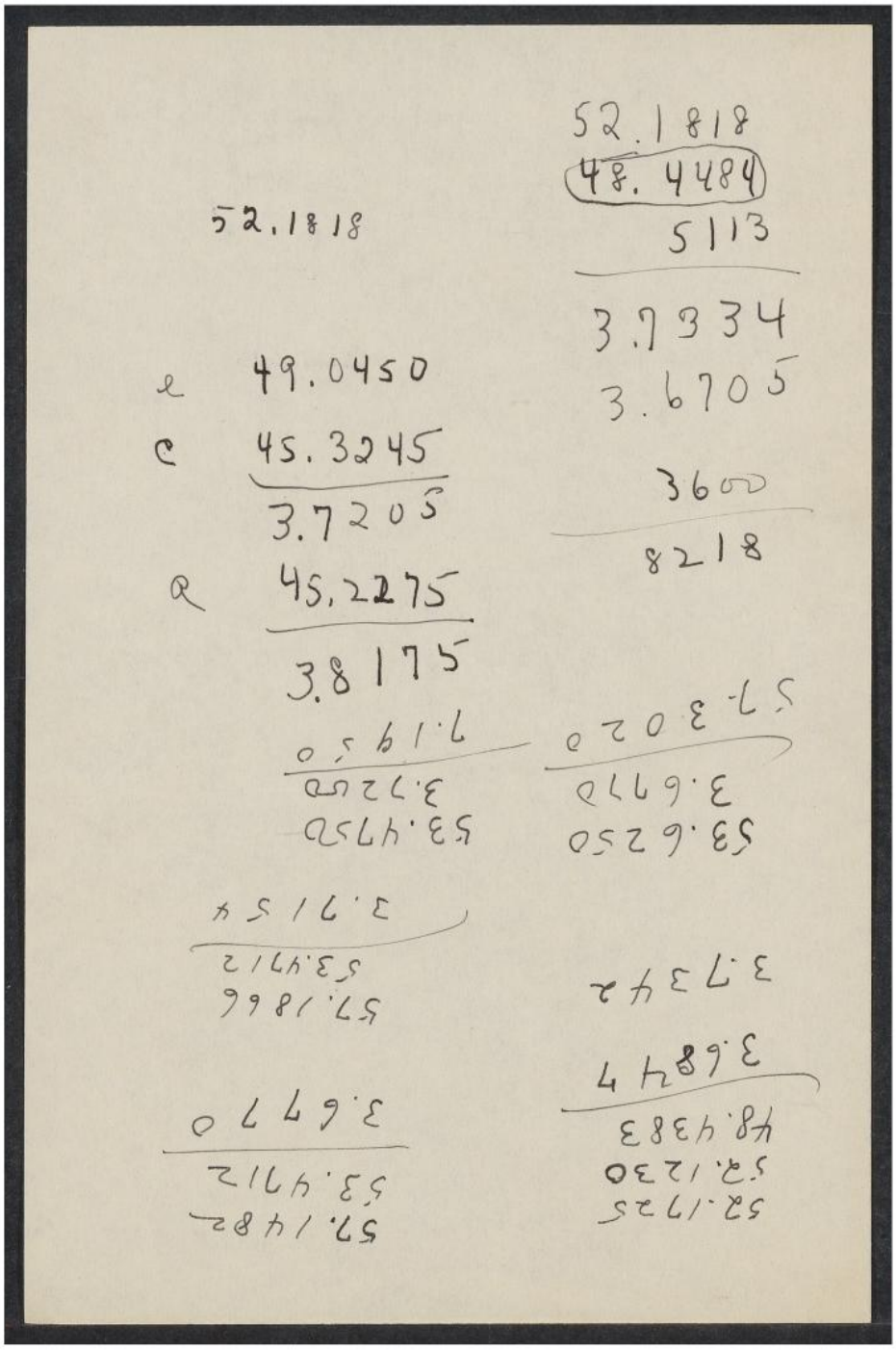
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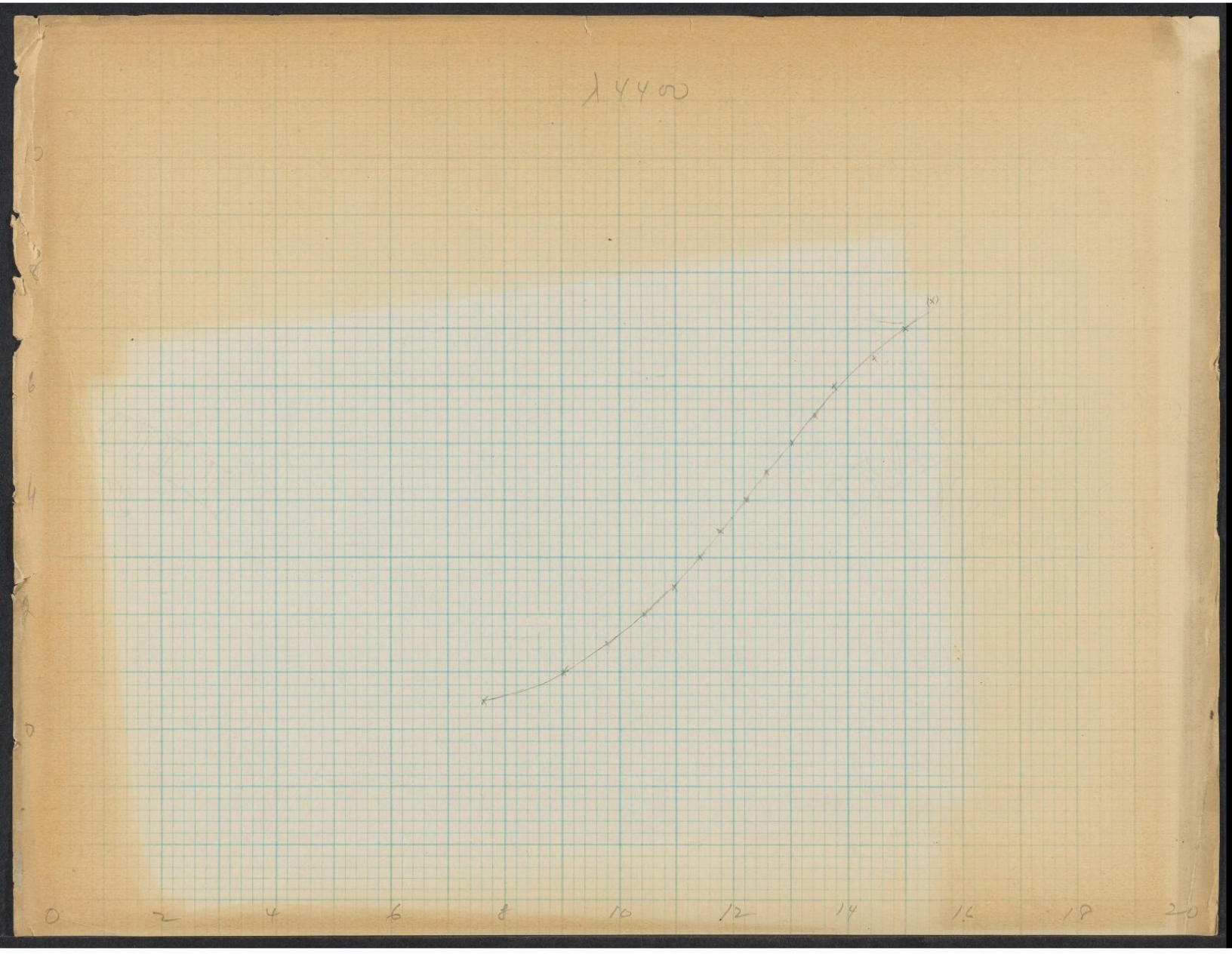


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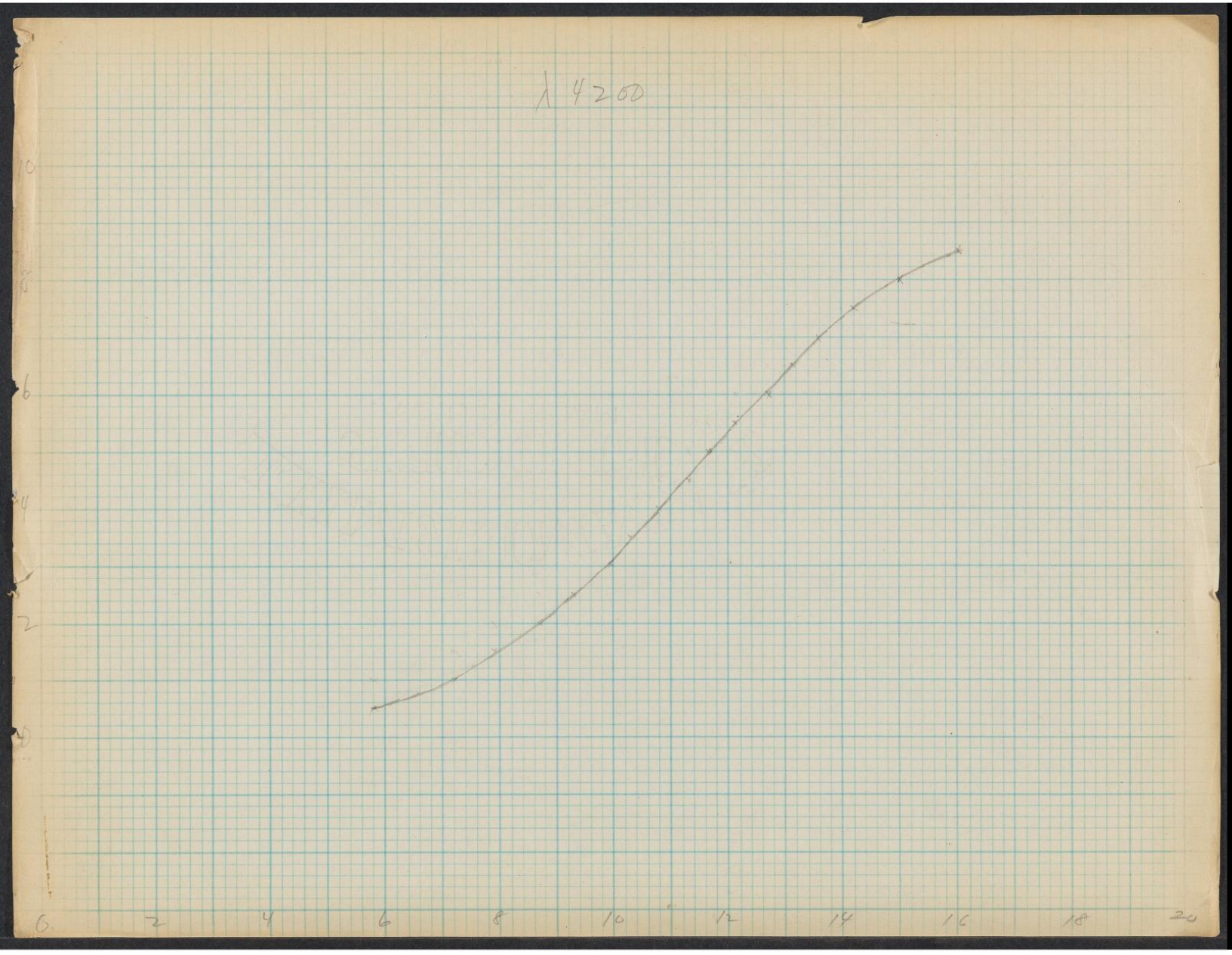
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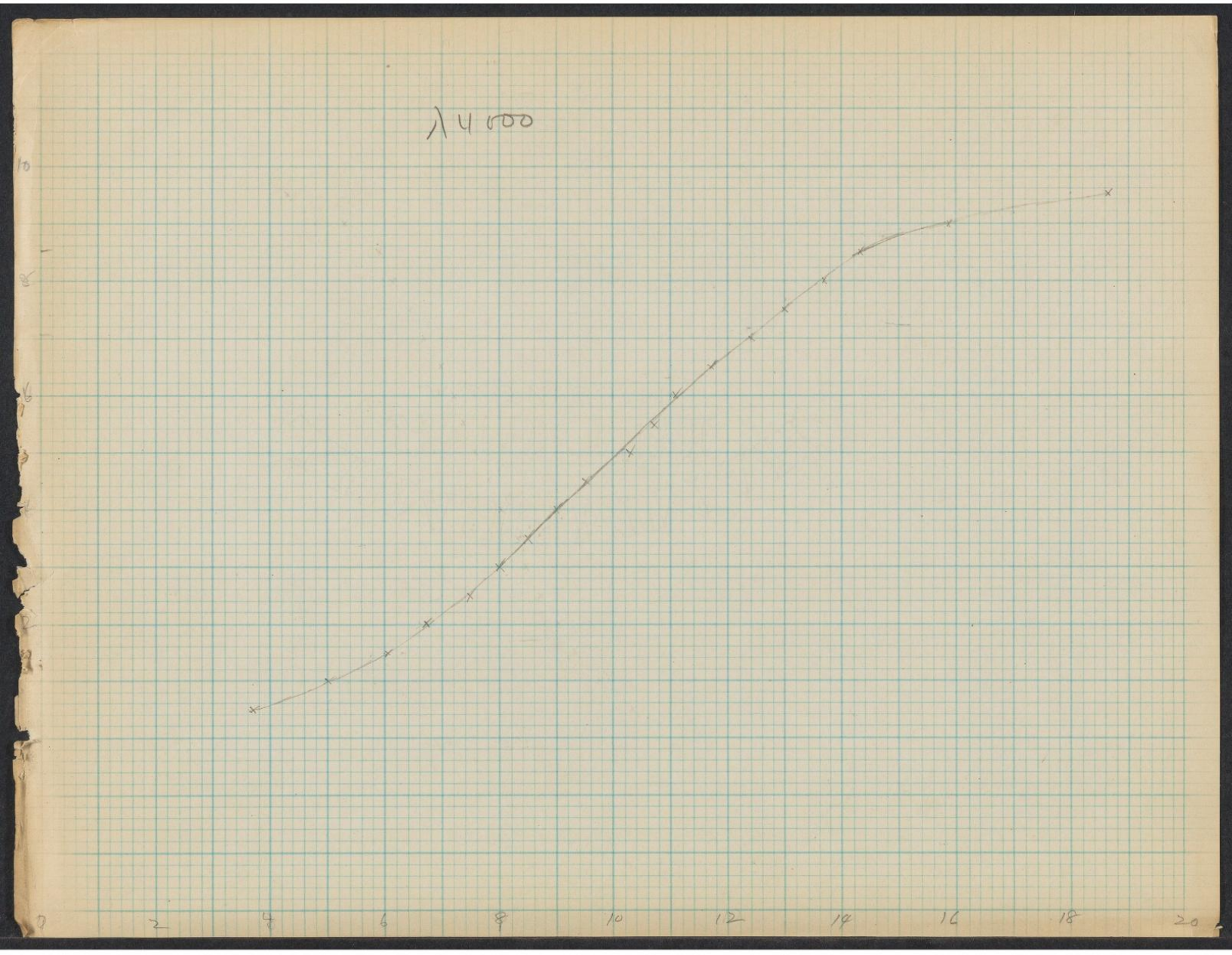
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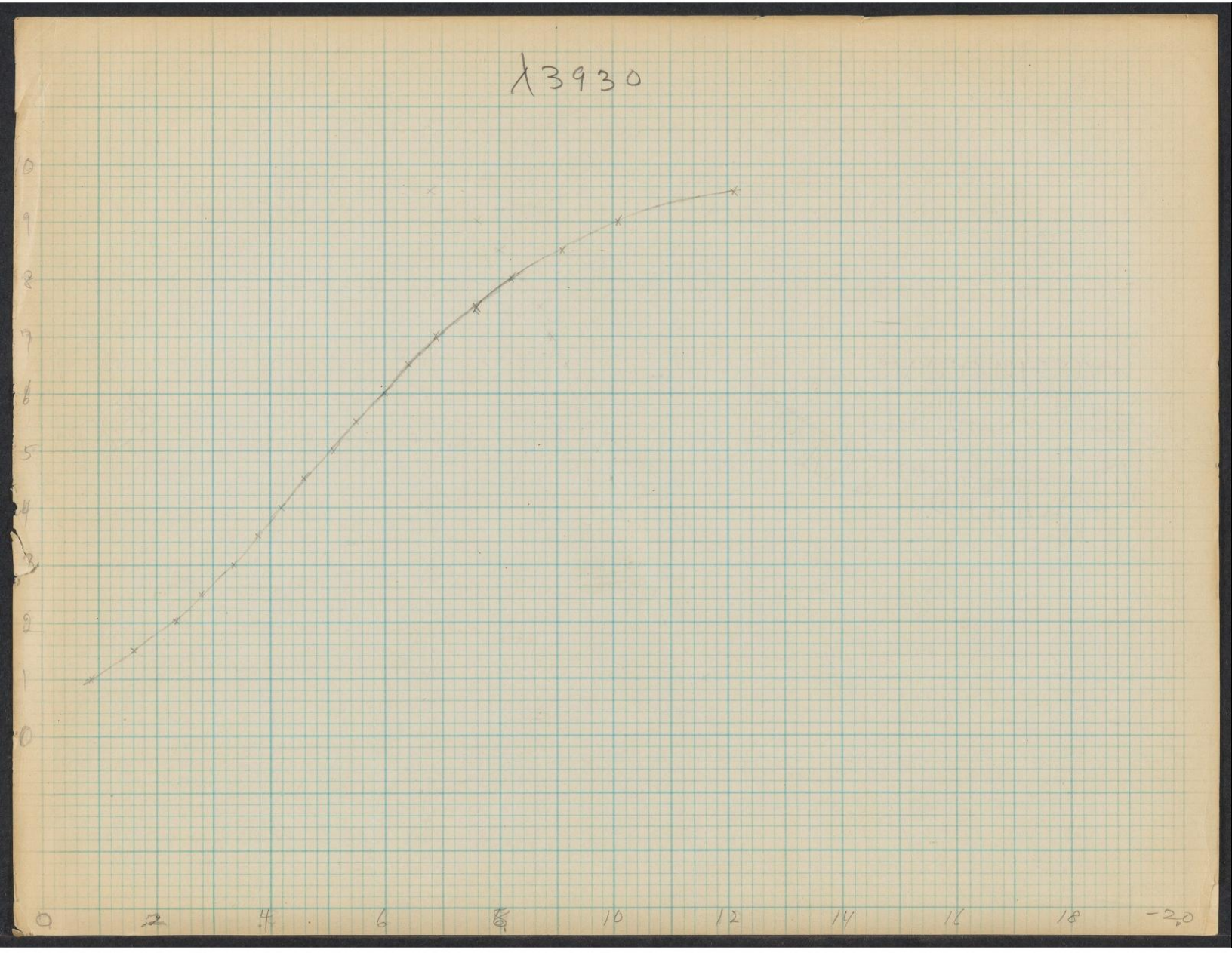
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3930
0.168

$u_0 = 10.18$
$H' = 10.15$

0.5	6.10	.0605	.870
1.0	5.10	506	890
1.5	4.57	453	900
2.0	4.13	410	910
2.5	384	381	916
3.0	349	346	923
3.5	324	321	929
	303	301	933
	277	275	939
	257	255	943
	231	229	949
	211	209	953
	189	188	958
	169	168	962
	140	139	968
	118	117	974
	080	79	982
	042	42	990

$\log T = -\sigma_\lambda$ th

4000 (0.158)

$u_0 = 10.08$
$H' = 10.21$

(10.00)	933	808
850	793	833
768	717	848
733	684	854
698	651	860
665	621	867
627	585	874
597	557	880
573	535	884
550	513	889
510	476	896
484	452	901
455	425	907
430	401	912
400	373	918
360	336	926
325	303	933
270	252	944
200	187	958

4200 (143)
10.05
10.05

		891
(9.5)	0802	851
890	752	841
840	709	849
804	679	855
778	657	860
750	633	864
720	608	869
690	583	874
668	564	878
640	541	883
612	517	888
590	498	892
552	466	898
518	437	904
470	397	913
426	360	920
345	291	935

4400 (131)
10.05
10.05 +

(10.00)	0773	837
970	750	841
935	723	849
890	689	853
869	672	857
843	652	860
813	629	865
791	612	869
763	590	873
740	573	876
710	549	881
675	522	887
636	492	893
584	452	901
495	383	416

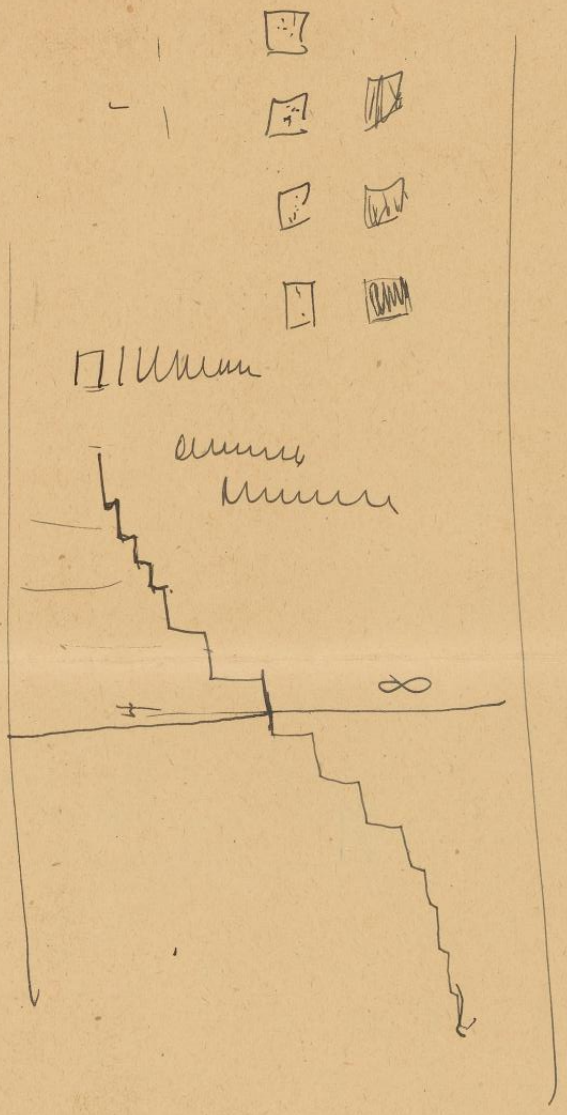
-1.210		198
-1.012		
-.906		106
820		86
762		58
692		70
642		50
602		40
550		52
510		40
458		52
418		
376		
236		
278		
234		
158		
84		

1866		
1586		
1434		
1368		
1302		
1242		
1170		
1114		
1070		
1026		
952		
904		
850		
802		
746		
672		
606		
504		
374		

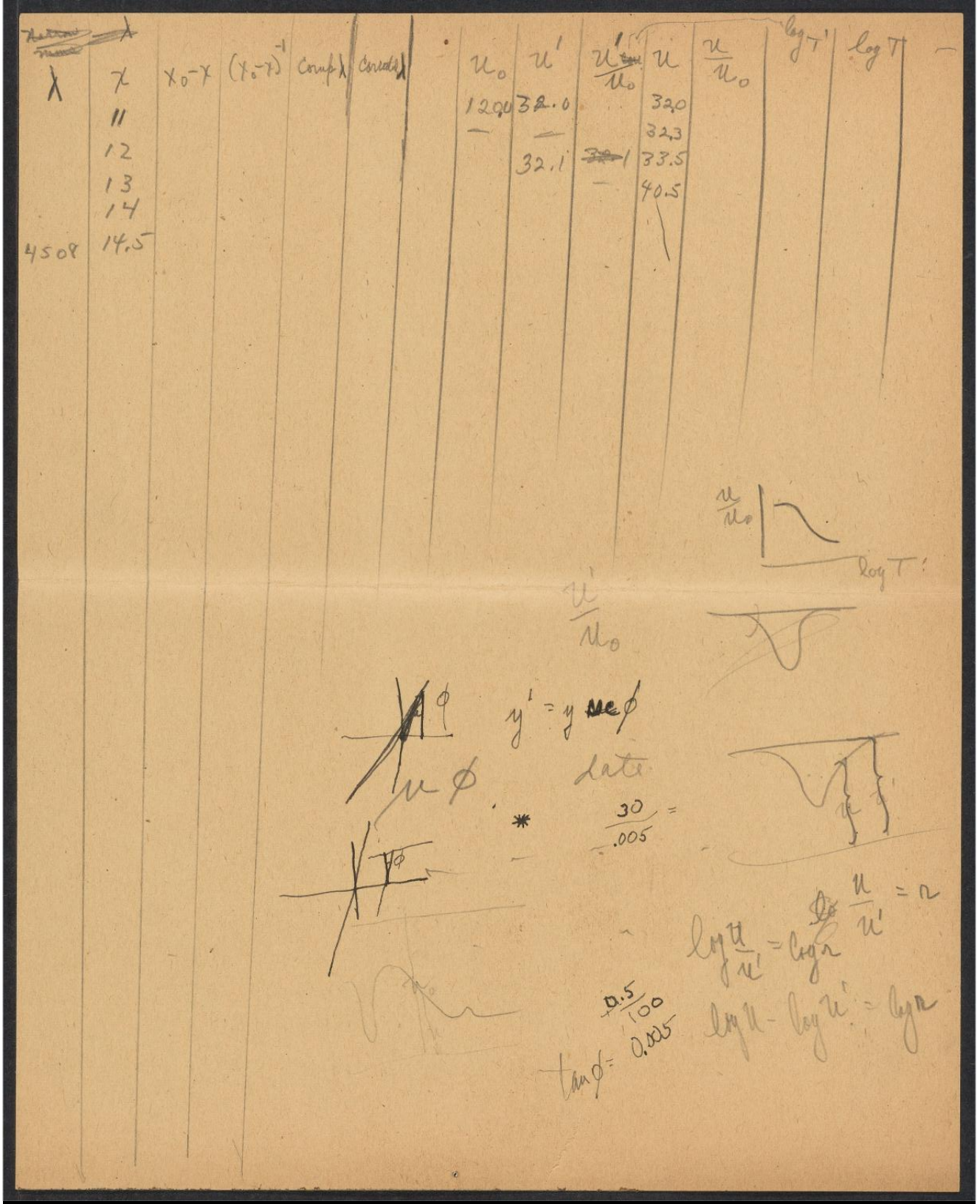
1604		
1504		
1418		
1358		
1266		
1216		
1166		
1128		
1082		
1034		
996		
932		
874		
794		
720		
582		

1546		
1500		
1446		
1378		
1344		
1304		
1258		
1224		
1180		
1146		
1098		
1044		
984		
904		
766		

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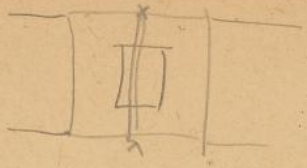
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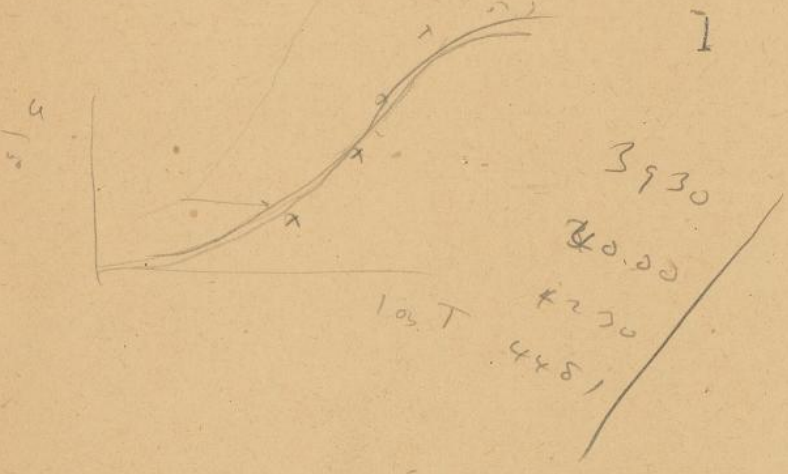


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Interpolation of Char. Curves – linear or ?
Angstroms?
Bad Clem films –
Bad focus –
Wave-length – for every trace?
Wedge height + Constant –
Means of measuring.
H – Hε
Bump on δ
Where to get λ's?





$\log T = \left(\frac{-\sigma}{\lambda}\right) k' \left(\frac{1}{\lambda} - \frac{1}{\lambda}\right)$

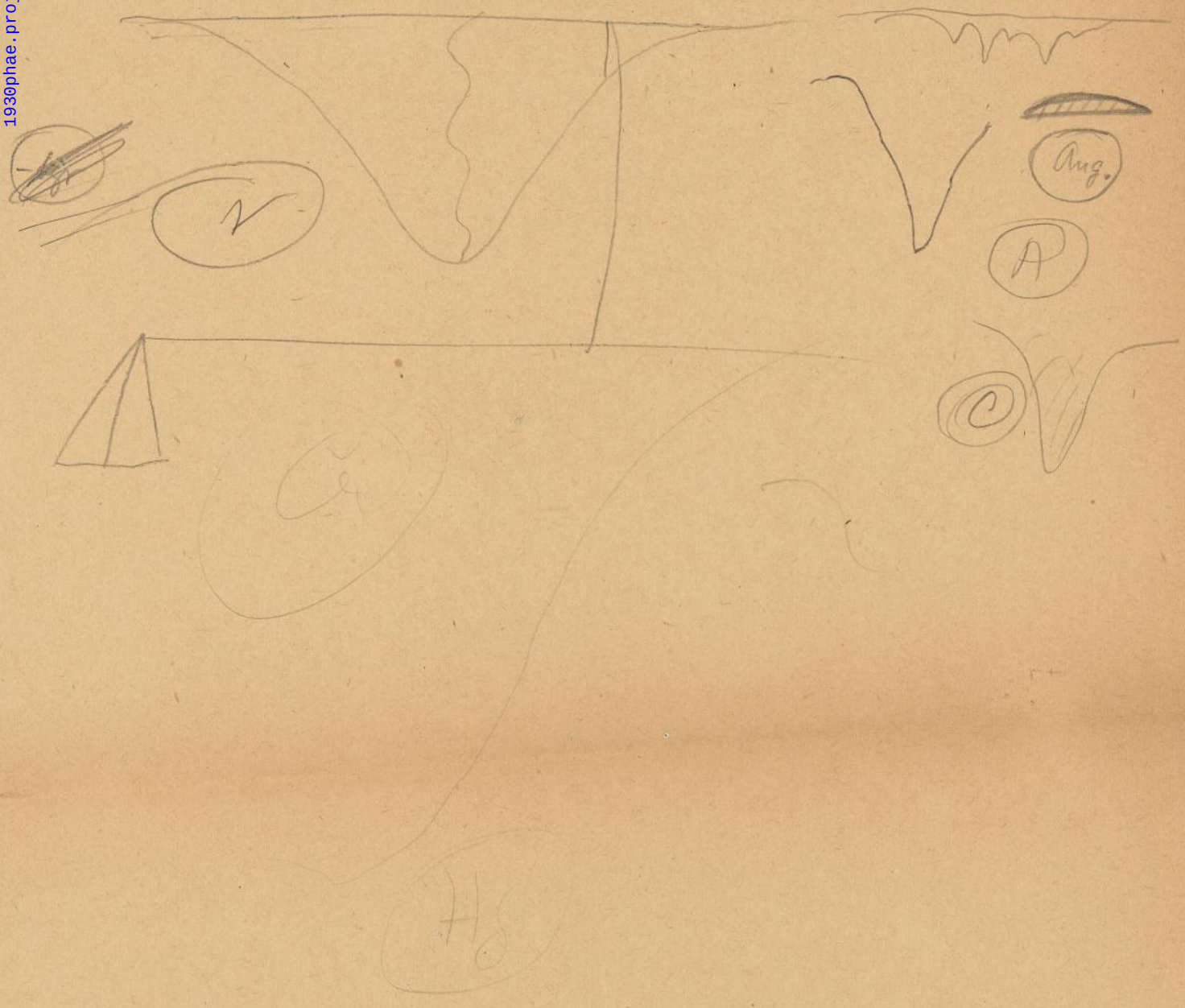
11.83



1

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57.6200
53.8900
3.7300

56560
52.8300
3.7306

5
58.7700
50.0270
3.7430

53.4461
3.6200
57.1161
8277
53.4895
3.7200
7.2095
.7695

52.661
730
391

.742
697
439

3.7400
.6966

.712
890
442

848
697
545

56.4457

716
730
446

845
670
515

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C Plate Dispersion.

0.55	26	3876	47.3
0.35	16	3897	45.7
0.58	29	~~3924~~ 3919	50.0
0.69	36	3952	52.2
0.64	32	3986	56.
0.92	51	4028	55.4
0.83	49	4078	59.0
1.22	71	4138	58.2
.96	60	4203	62.5
156	107	4286	68.6
62	45	4362	72.6
126	96	4433	76.2
83	68	4515	81.9
90	80	4589	88.9

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93.5470

Reduction of Plate #1015 Procyon.

Angle
1907, Nov. 4.

λ_1	3904.780	R_1	24.1868
λ_2	4163.647	R_2	33.5080
λ_3	4468.493	R_3	41.7114

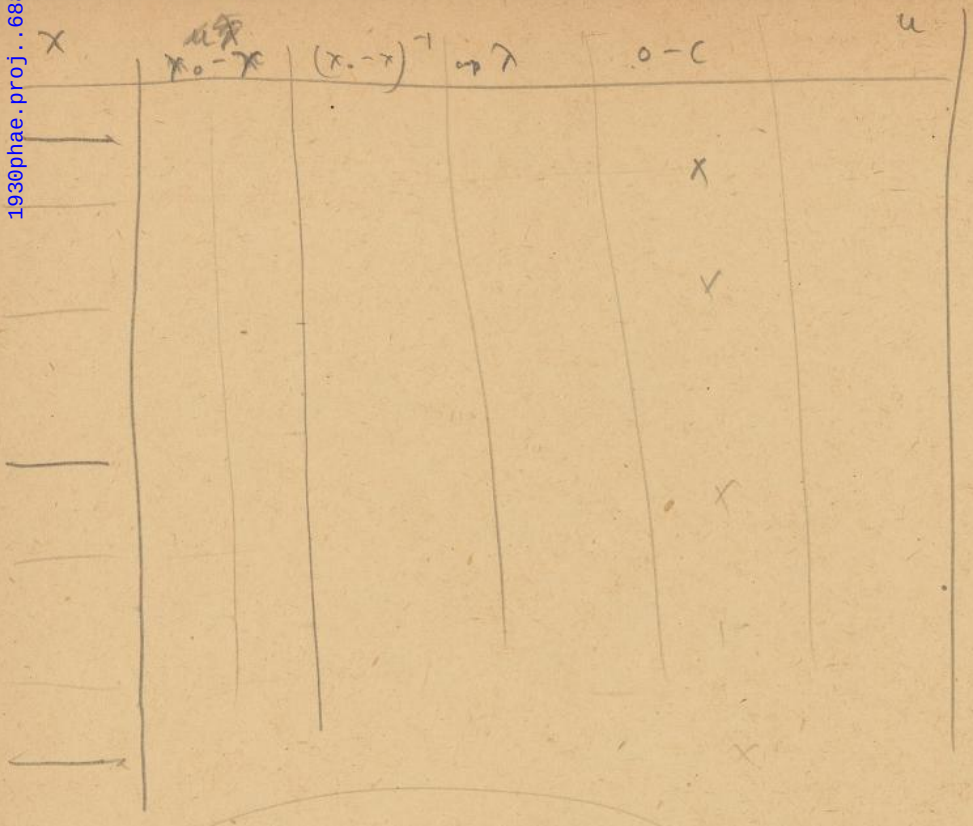
$$K = \frac{(R_2 - R_1)(\lambda_3 - \lambda_1)}{(R_3 - R_1)(\lambda_2 - \lambda_1)} = \frac{5254.481616}{4536540628} = 1.158\,25737$$

$\lambda_2 - \lambda_1$	258.867	$R_2 - R_1$	9.3212
$\lambda_3 - \lambda_1$	563.713	$R_3 - R_1$	17.5246

$K\lambda_2$	4822.5748	KR_3	48.312536	$\lambda_1 - \lambda_0$	1667.399	$R_1 - R_0$	−69.3602	C (provisional) 8 sig.
$K\lambda_2 - \lambda_3$	354.082	$KR_3 - R_2$	14.8045	$\lambda_2 - \lambda_0$	1926.266	$R_2 - R_0$	−60.0390	1156511.128
$\lambda_0 = \frac{K\lambda_2 - \lambda_3}{K-1}$	2237.3808	$R_0 = \frac{KR_3 - R_2}{K-1}$	93.5470	$\lambda_3 - \lambda_0$	2231.112	$R_3 - R_0$	−51.8356	1156511.084
								1156511.029
								1156511.08

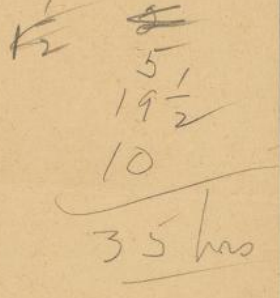
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$$\frac{I}{I_0} = e^{-(k_1 x + k_2)\gamma}$$









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$-.0605 = \bar{1}.9395$

x	u	u/u_0	$\log T$

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1938phae.proj.0080A

$h' = 11.831$ half mms.

$h''_a = 7.354$

$\frac{h''}{h'} = 0.62159$ ~~= 1.6088~~

$H' = 10.12$ mms.

$h'' = 3.7154$ mms

$\frac{H'}{h''} = 2.7238$ ~~= 0.036713~~

$\log T = -h\sigma_\lambda$

$h = \frac{h'}{H'} H$

$\frac{h'}{H'} = 0.059064$

57.1482
53.4712
3.6770

009

$\frac{h'}{H'} =$

57.1866
53.4712
3.7154

$\frac{h''}{h'} \times \frac{H'}{h''}$ $\frac{h''}{H'} \times \frac{h'}{h''}$

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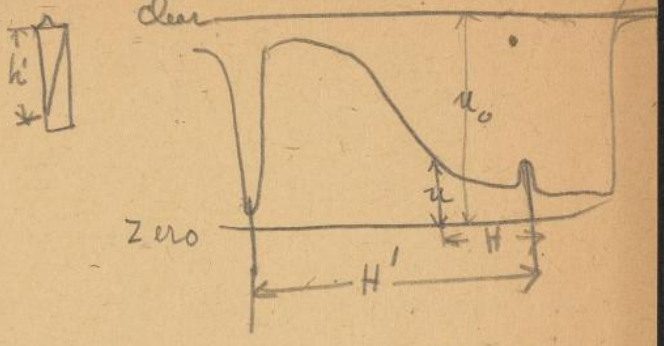
$T = \frac{u}{u_0} = 10^{-h\sigma_\lambda}$ σ_λ given in $\frac{1}{2}$ mm. units

$\log T = -h\sigma_\lambda$

h' = height of wedge

= 11.831 $\frac{1}{2}$ mm units

$h = \frac{h'}{H'} H$



On plate measure both to edge + to center of streak

h'' = height of spectrum

$\frac{h''}{h'}$ = mag of spectroscope

$\frac{H'}{h''}$ = mag. of $\mu\phi$

Full length of slit = 7.59 mms.

~~Magnified~~ Minific of $\mu\phi$ = 7.69

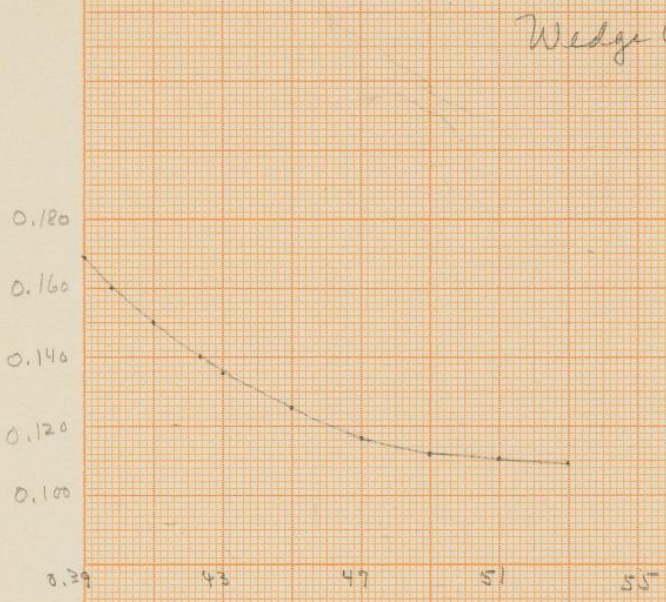
On plate full slit = 0.98 mm

Use length = $\frac{1}{2}$ mm. and width = .25

For averaging, see Rayleigh Sc. P. 1, 135; 1871
Slater Cond. Jeff. Lab 18, 1925

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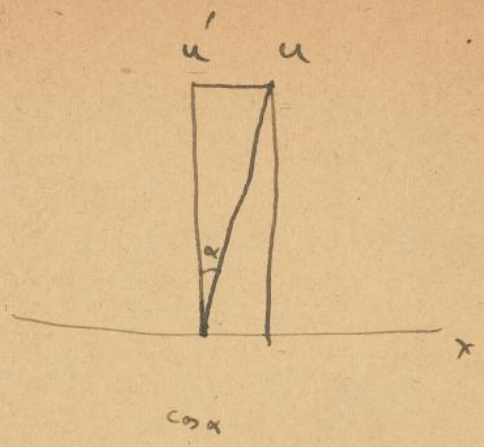
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KEUFFEL & ESSER Co NEW YORK.

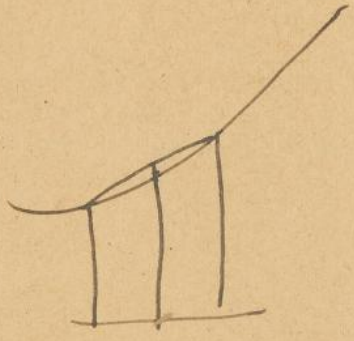
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$x = x' - u' \cos\alpha$

$u = u' \cos\alpha$



Phys. Rev.

J. Stu 1925

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Mean H'

Each quite separately - but which are pairs?

log T or T

Smooth curve?

Unit of total abs. + intensity

Char. curve

Straight portion T

Contrast $\eta - \eta_0 = \log p$ -

Average on traces? Then use T? Amount of correction

Plates at Lake.

Finish measuring magni.

Check them for defects -

λ's of char. curves -

σ_λ
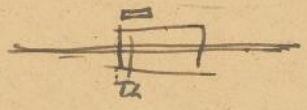


Plate of α Cyg -

Means of taking care of slope -

⅓ or ⅔ up for averaging

Four plates of Vega

½ -

30 25/50

Dominion Observatory
Victoria
B.C.

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1950phdtec.proj - GIBA

197
6
1182

197
482
394
1576
788
949

197
426
1182
394
788
839

197
38
1576
591
748

197
185
985
1576
197
364

197
248
1576
788
394
489

197
349
1773
788
591
687

197
136
1182
591
197
2679

197
227
1379
~~394~~
394
447
408

197
321
197
394
591
632

197
273
591
1379
394
538

197
288
1576
1576
394
567

197
67
1379
1182
132

197
96
1182
1773
189

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½ mm on plate

3.72
3.68

h' = 11.831
h'' = 736

1.60
736 | 11.831
736
4471
4416
55

0.0368
101.2 | 3.720
3036
6840
6072
7680
7084
596

27.2
13.6 mms. on trace
.0189
1224
1088
136
.2564

184
748
1472
736
1288
1376 3

368
160
2208
368
5888
167
41216
35328
5888
9833
2
19666
11796

184
85
1104
1472
158

589
156
3534
2945
589
91884

919
2
1838

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$h' = 11.831$

$h''_a = 7.44$

$H' =$

$h''_b = 3.68$

$h = \frac{h'}{h''_a} \frac{h''_b}{H'} H =$

$= 0.0579\, H$

$\log T = -h\sigma_\lambda$

$= -0.0189\, H$

372

1.59

7.44 | 11.831
744
4391
3720
6710
6696

0.0365

101.3 | 3.680
3036
6440
6072
3680
3036
644

3.68

101.8
101.9
100.7
100.6
101.2

189 × 185 = 9 4 5 / 1522 / 189 / 351

189 × 227 = 1323 / 378 / 378 / 42903

189 × 207 = 1323 / 378 / 39123

364 × 159 = 3276 / 1820 / 364 / 57876

189 × 386 = 1134 / 1522 / 567 / 730

189 × 165 = 945

189 × 426 = 1134 / 378 / 756 / 80414

189 × 312 = 1134 / 189

189 × 38 = 1522 / 567 / 7192

0.0189 × 60 = 1.1340

189 × 482 = 378 / 1522 / 756 / .91198

.0579 × .163 = 1737 / 3474 / 579. / .0094377

189 × 288 = 1522 / 1522 / 378 / 54542

189 × 273 = 567 / 1323 / 378 / 51597

189 × 321 = 189 / 378 / 567 / 60669

189 × 349 = 1701 / 756 / 567 / 659613

189 × 144 = 756 / 756 / 189 / 27216

944 × 2 = .01888

189 × 248 = 1522 / 756 / 378 / 46882

189 × 96 = 1134 / 1701

189 × 67 = 1323 / 1134 / 12663

189 × 119 = 1701 / 189 / 189 / 22491

189 × 27 = 1323 / 378 / 5103

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.145

1037 | 15
1037
4630
4148
4820

.0964

1037 | 10000
9333
6670
6222
4480

964
30
4820
.2892
33740

964
25
4820
19280
.24100

964
45
4820
38560
43380

965
7
6755
3990
5790

963

1036 | 10000
9324
6760
6216
5440
5180
2605

963
55
4815
4815
2965

963
7
6741

965
8
7720
4825

967

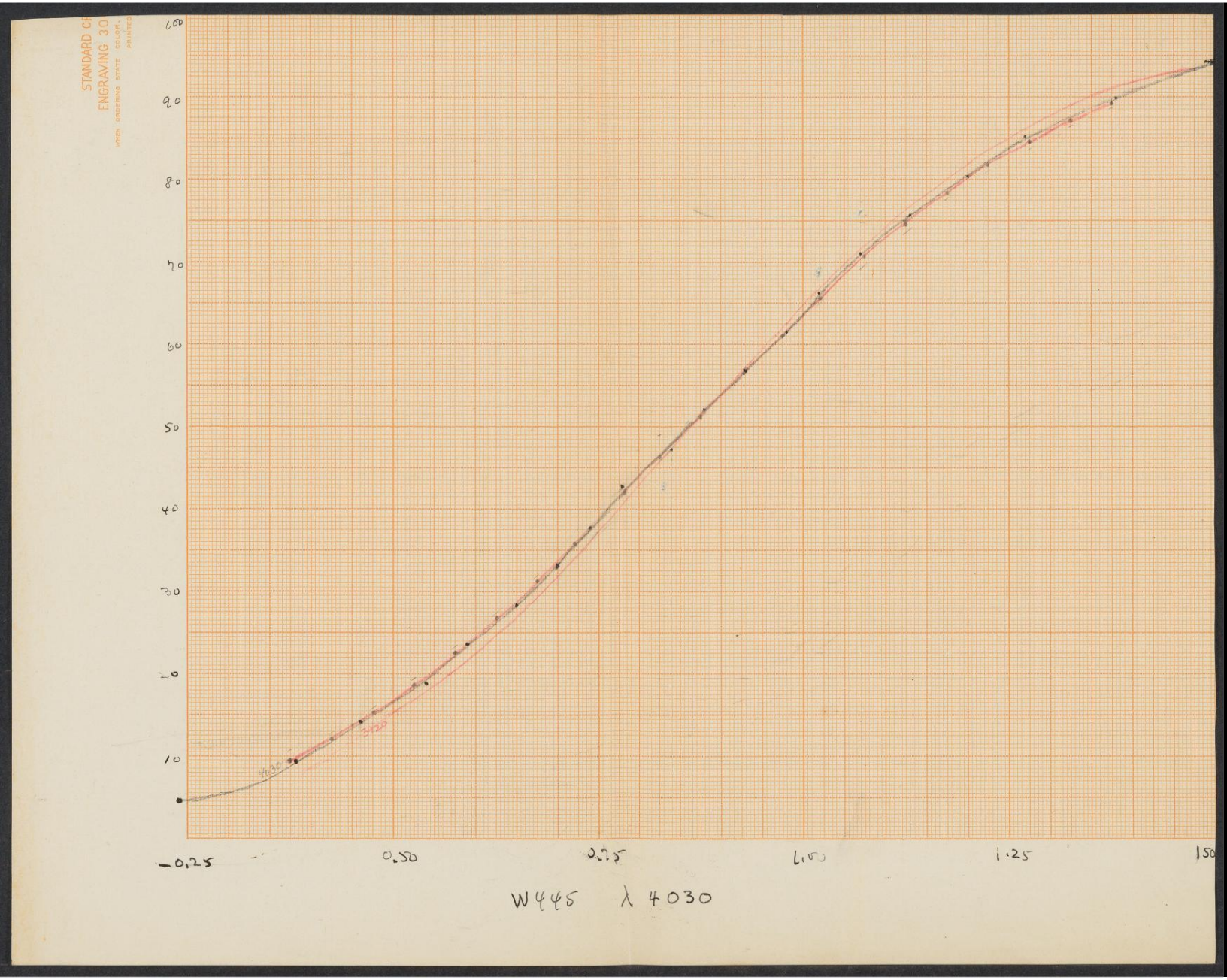
1034 | 10000
9306
6940
6204
7360

967
9
8703

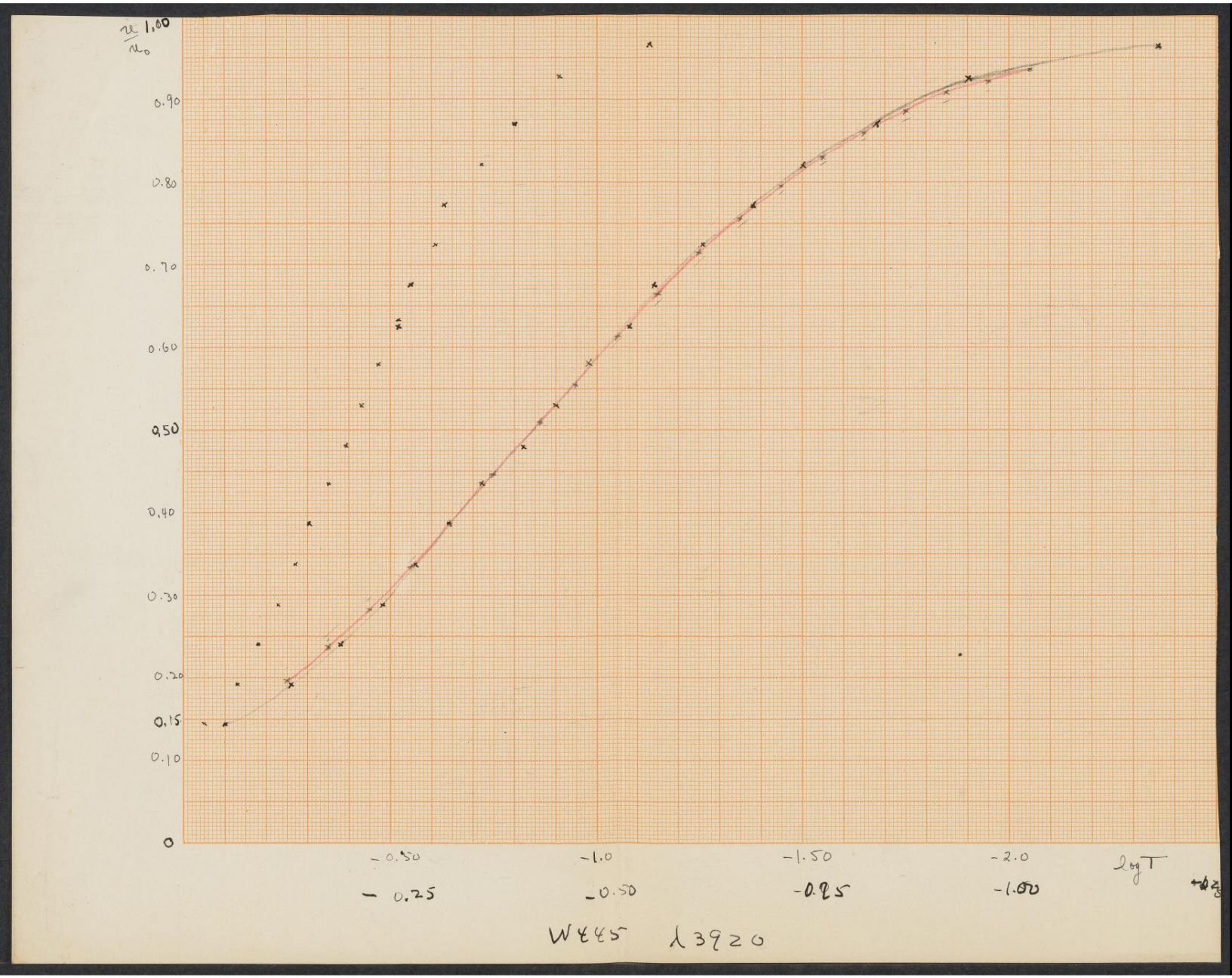
966
75
4830
6762
7245

103

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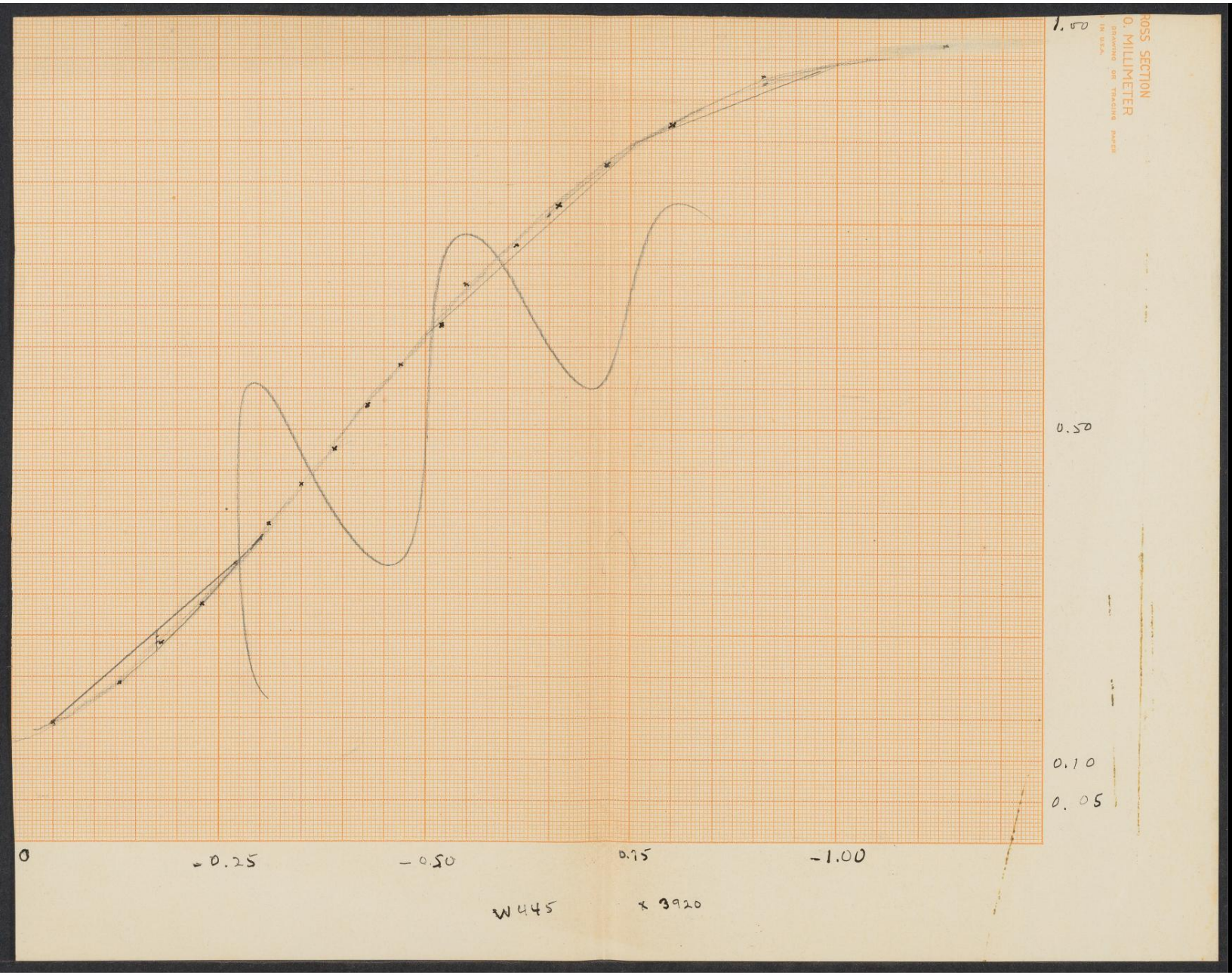
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1038	963
103.7	964
1036	965
103.5	966
103.4	967

1059	944
1057	946

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