COMMUNICATIONS
FROM THE
KONKOLY OBSERVATORY
OF THE
HUNGARIAN ACADEMY OF SCIENCES

MITTEILUNGEN
DER
STERNWARTE
DER UNGARISCHEN AKADEMIE
DER WISSENSCHAFTEN

BUDAPEST — SZABADSÁGHEGY

No. 87.

S. KANYÓ

MULTIVARIABILITY OF RS BOOTIS

BUDAPEST, 1986

ISBN 963 8361 24 7
HU ISSN 0324 — 2234

Felelős kiadó: Szeidl Béla

Hozott anyagról sokszorosítva

8616747 MTA Sokszorosító, Budapest. F. v.: dr. Héczey Lászlóné

MULTIVARIABILITY OF RS BOOTIS

ABSTRACT

3420 photoelectric observations obtained between 1971 and 1978 are reported. The long period variation obtained by Oosterhof has been confirmed and its change defined (P_1 = 533 days). A shorter cycle of 62 days has been found superimposed on the long period. The brightening of the star during the cycle of 62 days is yellowish or cool. The secular change in the pulsation period has been found ($\beta = 10^{-11}$ day cycle^{-1}). Detached O-C_2 residuals give a curve of sinusoidal form which, in a binary system, could be due to an orbit period motion of 70 years.

INTRODUCTION

The light variability of RS Boo (=BD +32°2489) was discovered by Harwig and Pracka (1907). A period of light variation of 0.37722 day was first disclosed by Pracka (1910). The colour variation of RS Boo was announced by Seares and Shapley (1914) and shortly after, its spectrum was given B8 in Max. and F0 in Min. by Pease (1914). Two independent sets of visual and photographic observations in an interval of several years were discussed by Seares and Shapley (1918). There was some evidence of irragular fluctuations in light, but no certain indication of a variation in the period. The change in colour agreed closely with that inferred from Pease's spectrograms. A new period of P = 0.37733506 day was also disclosed.

Although many observers were attracted to observing RS Boo, they were unable to get conspicuously new results because of the lack of any long sets of observation. However it is interesting to note that Lause (1931) found a significant variation in the phase and the height of maximum light.

The first long sets of observations were carried out by Oosterhof (1945). These new sets of very accurate photographic observations ranged over a time-interval of five years and resulted in 22 very nice light curves. During the years 1938-1944, 2418 photographic observations were obtained which have an internal mean error of ±0.036 magn.

Oosterhof derived the new epoch

$$E = 2428972^{d}.6633 + 0^{d}.37733657\ t$$

for the fundamental period, moreover he was able to determine a very long secondary period of 537 days, which is the longest one up till now among the RR Lyrae stars. The shape and the period both appeared to be subjected to a variation of secondary period. Oosterhof stated that any earlier observation had had too short sets for determining the long secondary period of RS Bootis.

Having analysed his own data he suspected some light variation above the two periods. He stated: "It may be ... that a secular or long period change of the period still makes itself felt in the six years of observation or that other minor variation of unknown type have remained undiscovered."

OBSERVATIONS

The first sets of photoelectric observation were carried out by Csank and Geffert in 1959 using the 60 cm Newton telescope at Budapest. However, the long sets of observation were initiated by the author and fifty valuable light curves were obtained at Konkoly Observatory in the period 1971-1978.

The photoelectric observations were carried out using a 24 inch telescope equipped with an unrefrigerated photometer with an EMI 9502 B type tube. The following filters were employed: Schott GG 11 in V, BG 12+GG 13 in B and UG 1 in U.

Valuable U observations were not obtained because of the faintness of the variable star and the atmospheric condition at Budapest. The comparison star BD $+32^{o}2486$ was close to the variable, no correction has been made for differential extinction. The accuracy of individual B,V observations was about 0.01 magn. The photoelectric observations have been transformed into the UBV system in the traditional way. The verification of a possible shorter secondary variation suspected by Oosterhof was the main purpose of our observation. In view of this it considered necessary to get light curves distributed smoothly on the supposed shorter secondary period.

Our results confirmed a very long period of 533 days which is slightly shorter than that obtained by Oosterhof. Moreover, a shorter cycle of 62 days was found which was superimposed on the long period of 533 days.

LIGHT CURVE AND PHASE VARIATION

Although the amplitude and phase variation in the cycle of 62 days have no comparable values with the variation of period of 533 days, even so they are significant and much higher values than the inaccuracy of the observations (Kanyó, 1980). The obtained cycle of 62 days does not offer evidence for definitive periodicity partly because of the irreducible perturbation of the long period variation.

The most important features of the cycle of 62 days are:

- The maxima and minima of the light curves together show both increasing or decreasing variation superimposing on the long period (Fig. 1,2). Therefore the secondary period seems to be an independent event from the fundamental and long periods, which periods, however, do not seem to be independent (Fig. 3).

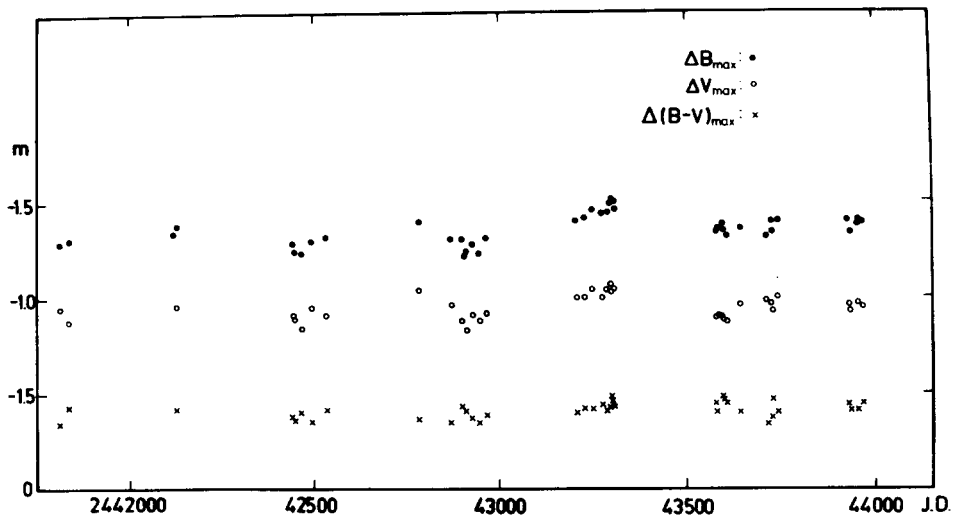

Fig. 1

- The blue amplitude of the cycle of 62 days is not higher than the yellow one. That is, the brightening during the cycle does not show a shift to the blue colour, rather it shifts to the yellow. In contrast the long period produces the blue shift due to the increase in temperature of the variable star.

- The light curves show some O-C variation in both the secondary and the long periods. However these O-C variations are not significant in relation to the size of the respective period. The amplitude of O-C variation in 62 days

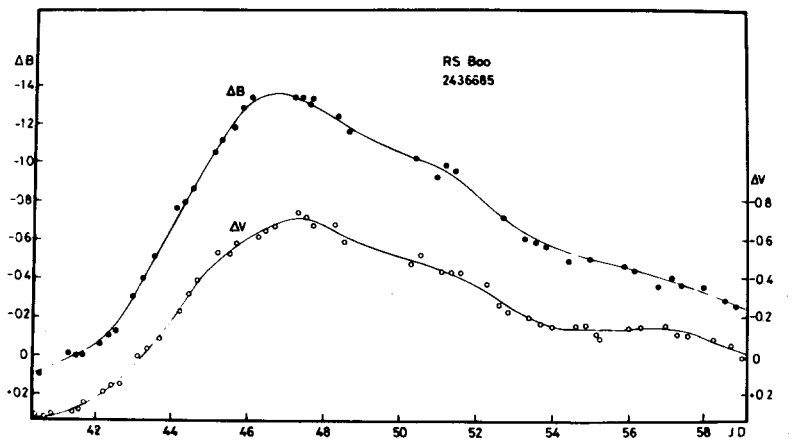

Fig. 2a

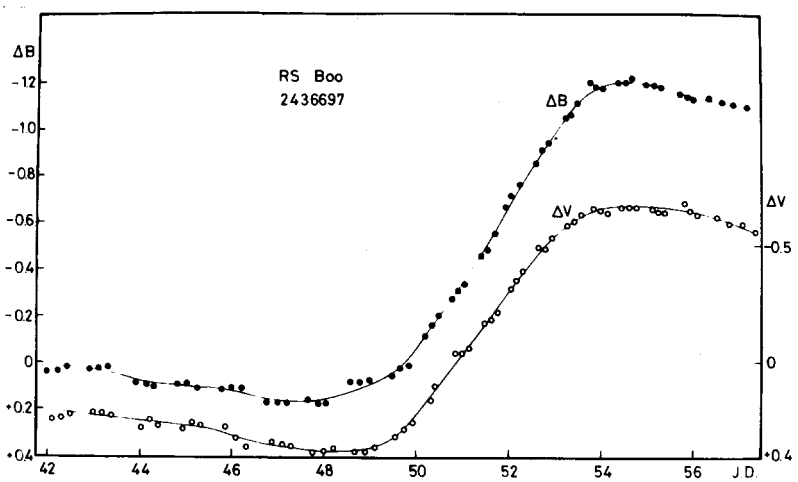

Fig. 2b

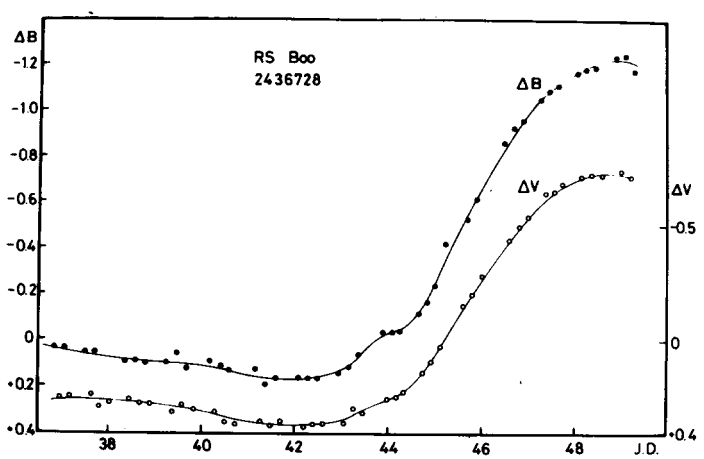

Fig. 2c

is about 0.01 day, and 0.03 day in the long period. The small variations of O–C suggest that the effects interacting in the respective periods seem to be relatively small.

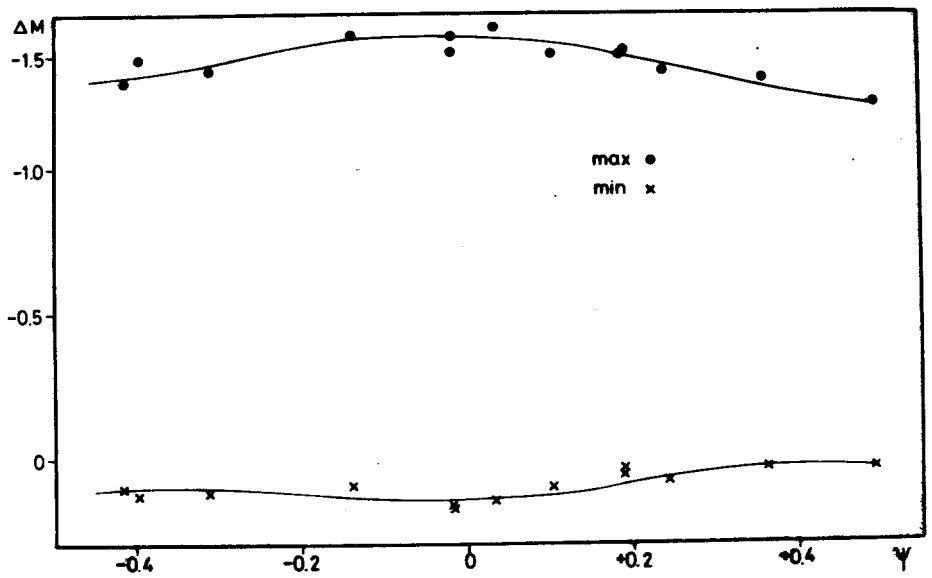

Fig. 3

Since a great number of photometric observations have been collected over the past 60 years it makes it possible to construct O–C residuals in a continuous long term (Fig. 4).

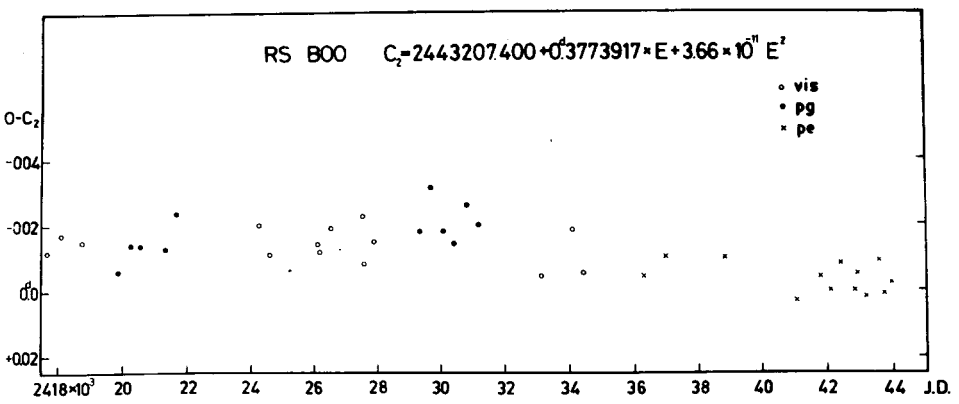

Fig. 4

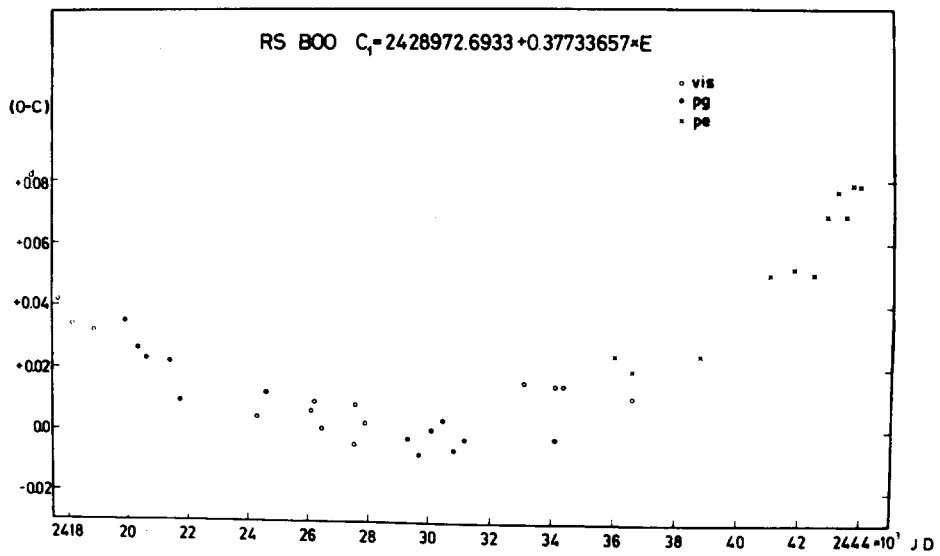

Fig. 5

The moment of maxima are collected in Table 1. The $O-C_1$ residuals are calculated by the linear elements:

$$J.D.max.hel. = 2428972.6933 + 0.37733657xE.$$

A parabolic curve (Fig. 5) fit yielded the quadratic term:

$$+ 3.66x10^{-11}E^2.$$

The $O-C_2$ residuals calculated by the quadratic formula show a remarkable fluctuation which is partly due to the O-C variation in the long period (Table 2). In addition it is apparently a very long cycle of small amplitude. However this suspected long period requires more definitive verification in order to be able to calculate the orbit parameters of a presumable binary system (Szeidl, 1983).

SUMMARY

The most important result of our investigation is a new cycle of 62 days of the variable stars.

This 62-day cycle does not seem to be related to the fundamental period (i.e. to the pulsation) since the light curve appears to be superimposed on the cycle of 62 days. The brightening of the star during the cycle is cool one. This phenomenon is explainable by the supposition of a new, physically strongly independent, and cooler source of light. A well known old standing fact is the irregularity of RS Boo, that it belongs to the RR_c subclass due to its short period, and to the RR_{ab} subclass due to the shape of its light curve. The long (Blashko) period of 533 days of the star discovered by Oosterhof is an extraordinarily long one among the RR Lyrae stars, but the long period effect is small in both the amplitude and the O-C variations.

The parabolic shape of the $O-C_1$ residuals refers to a continuous increasing of the fundamental period ($\beta = 3.66.10^{-11}$ day cycle^{-1}). If the parabolic curve is separated from the O-C, the remnant shows a curve of sinusoidal, wave form which gives a very long period. Supposing that this curve were due to the orbit motion of a binary system the orbit period would be about 70 years.

Certainly, the behaviour of the cyclic variation of 62 days and the secular variation of $O-C_2$ residuals, both confirm the suspicion of a possible binary system.

Since there are a number of open questions the continued investigation of RS Bootis is desirable and reasonable.

REFERENCES

Ahnert, P., 1961, Mitt. Varän. Sterne 543
Alania, I.F., 1953, Astron. Circ. No. 146
Dombrovski, V.A., 1935, Tadjik Circ. No. 13, 2
, Per. Zvezdy 4, 102
Fatkina, T.D., 1950, Per. Zvezdy 7, 271
Harwig and Pračka, L., 1907, Astron. Nachrichten 176, 188
Hellerich, J., 1925, Astron. Nachrichten 226, 9
Jordan, J., 1926, Allegh. Publ. 7, 25
Judkina, V.P., 1953, Per. Zvezdy 9, 314
Kanyó, S., 1980, Inf. Bull. Var. Stars No. 1832
Lange, G.A., 1959, Astron. Circ. No. 207, 18
Lause, F., 1931, Astron. Nachrichten 244, 61
Martin, C., 1918, Monthly Notices RAS 78, 640
Okunev, 1932, Poulk. Circ. No. 2
Oosterhoff, P.Th., 1945, Bull. Astron. Inst. Netherlands 369, 20
Parenago, P.P., 1930, Astron. Nachrichten 240, 327
Pease, 1914, Publ. Astron. Soc. Pacific 26,257
Pohl, E., 1953, Astron. Nachrichten 282, 237
Pračka, L., 1910, Astron. Nachrichten 184, 57
Robinson, L.V., 1930, Bull. Harvard Obs. No. 876
Seares, F.H. and Shapley, H., 1914, Publ. Astr. Soc. Pacific 26, 202
, 1918, Astroph. J. 48, 214
Soloviev, A.V., 1935, Tadjik Circ. 13, 1
, Per. Zvezdy 4, 102
Spinrad, H., 1961, Astroph. J. 130, 539
Szeidl, B., 1983, Commun. Konkoly Obs. Hung. Acad. Sci. No. 84
Tsessewich, V.P., 1931, Astron. Nachrichten 241, 188

Table 1.

J.D.max./$JD_{\odot}$/	O-C_1	O-C_2	$\overline{O-C}_2$	Rem.	Obs.
2417668.109	-0.012	+0.042	+0.042	Pr	vis
18117.889	0.014	0.037		SS	vis
118.638	0.020	0.032		SS	vis
139.775	0.014	0.037	+0.034	SS	vis
153.728	0.021	0.029		SS	vis
178.638	0.016	0.035		SS	vis
879.726	0.015	0.032	+0.032	SS	vis
19923.442	0.006	0.035	+0.035	Ro	pg
20331.711	0.014	0.026	+0.026	Sh	pg
577.733	0.014	0.024	+0.023	Jo	pg
594.709		0.020		Jo	pg
603.770		0.025		Jo	pg
21372.402	0.013	0.022	+0.022	Ok	pg
724.444	0.024	0.009	+0.009	MP	pg
24292.592	0.020	0.004	+0.004	He	vis
610.317	0.011	0.012	+0.012	Pa	pg
26089.470	0.014	0.006	+0.006	Ts	vis
166.448	0.012	0.007	+0.009	La	vis
206.444	0.014	0.005		La	vis
214.378	0.004	0.015		La	vis
217.389	0.012	0.007		La	vis
248.333	0.010	0.010		La	vis
331.716	0.017	0.001		La	vis
420.390	0.018	0.001	0	La	vis
427.561	0.017	+0.003		La	vis
452.458	0.023	-0.004		La	vis
475.481	0.018	+0.001		La	vis
487.557	0.017	+0.002		La	vis
489.437	0.023	-0.004		La	vis
515.479	0.018	+0.002		La	vis
518.496	0.019	0		La	vis
523.400	0.021	-0.002		La	vis
546.420	0.018	+0.001		La	vis
27308.276	0.003			Do	vis
538.809	0.023	-0.005	-0.005	So	vis
615.422	0.008	+0.008	+0.008	Do	vis
909.738	0.015	+0.002	+0.002	So	vis
29326.630	0.022	-0.005	-0.003	Oo	pg
373.428	0.013	+0.003		Oo	pg
694.532	0.022	-0.006	-0.007	Oo	pg
726.614	0.014	+0.002		Oo	pg
730.376	0.026	-0.009		Oo	pg
751.501	0.032	0.015		Oo	pg
30066.589	0.019	0.003	0	Oo	pg
071.496	0.017	-0.001		Oo	pg
092.632	0.012	+0.004		Oo	pg
114.510	0.020	-0.004		Oo	pg
168.476	0.024	+0.003		Oo	pg
442.426	0.010	0.007	+0.003	Oo	pg
443.557	0.009	+0.006		Oo	pg
465.436	0.017	-0.001		Oo	pg
488.456	0.015	+0.002		Oo	pg

Table 1. cont.

J.D.max./JD$_\odot$/	O-C$_1$	O-C$_2$	$\overline{O-C}_2$	Rem.	Obs.
2430514.492	-0.015	+0.002		Oo	pg
517.510	0.015	+0.001		Oo	pg
790.688	0.030	-0.013	-0.009	Oo	pg
812.580	0.023	0.006		Oo	pg
849.556	0.026	0.009		Oo	pg
31200.486	0.019	0.002	-0.003	Oo	pg
223.502	0.021	-0.004		Oo	pg
33135.108	0.004	+0.015	+0.015	Fa	vis
34104.489	0.003	0.019	+0.014	Po	vis
112.396		0.001		Po	vis
120.322	0.018	0.003		Al	pg
132.401		0.008		Po	vis
147.494	0.014	0.007		Ju	vis
166.372	0.003	0.018		Ju	vis
171.298		0.031		Ju	vis
180.330	0.007	0.015		Ju	vis
455.411	0.005	0.018	+0.014	Po	vis
472.384		0.010		Po	vis
478.421		0.010		Po	vis
484.465		0.017		Po	vis
36314.932	0.004	0.024	+0.024	Sp	pe
661.306	0.026	0.003	+0.010	Ln	vis
664.330		0.008		Ln	vis
667.360		0.020		Ln	vis
670.366		0.007		Ln	vis
703.961	0.010	0.019	+0.019	Pp	pe
37026.591		0.026	+0.026	Ah	vis
38845.732	0.005	0.028	+0.028	Fi	pe
41056.561	-0.007	0.042	+0.050	Pp	pe
076.570	+0.009	0.052		Pp	pe
084.498	+0.007	0.056		Pp	pe
810.490	-0.002	0.052	+0.052	Pp	pe
835.387	-0.009	0.045		Pp	pe
42120.666	+0.002	0.058		Pp	pe
128.586	-0.002	0.054		Pp	pe
443.658	0.008	0.050	+0.050	Pp	pe
449.697	0.006	0.051		Pp	pe
454.600	0.009	0.049		Pp	pe
465.540	0.012	0.046		Pp	pe
493.466	0.009	0.049		Pp	pe
532.336	0.005	0.054		Pp	pe
786.673	0.005	0.066	+0.069	Pp	pe
870.436	0	0.070		Pp	pe
899.490	-0.002	0.071		Pp	pe
905.523	0.006	0.067		Pp	pe
910.434	0.001	0.072		Pp	pe
927.410	0.005	0.068		Pp	pe
947.408	0.006	0.067		Pp	pe
964.389	0.005	0.068		Pp	pe
43207.399	0.001	0.073	+0.077	Pp	pe
219.475	0	0.075		Pp	pe
227.397	-0.002	0.073		Pp	pe

Table 1. cont.

J.D.max./$JD_\odot$/	O-C_1	O-C_2	$\overline{O-C}_2$	Rem.	Obs.
2443228.535	+0.004	+0.079		Pp	pe
251.555	0.006	0.081		Pp	pe
276.454	0.001	0.076		Pp	pe
288.531	0.003	0.078		Pp	pe
298.340	0.001	0.076		Pp	pe
302.491	0.001	0.077		Pp	pe
304.380	0.003	0.079		Pp	pe
308.533	+0.006	0.081		Pp	pe
580.582	-0.007	0.071	+0.069	Pp	pe
583.596	0.012	0.066		Pp	pe
597.559	0.010	0.067		Pp	pe
599.444	0.012	0.066		Pp	pe
608.506	0.006	0.072		Pp	pe
645.486	0.005	0.073		Pp	pe
716.426	-0.004	0.073	+0.079	Pp	pe
727.377	+0.003	0.082		Pp	pe
730.394	0.001	0.080		Pp	pe
744.357	0.003	0.081		Pp	pe
931.515	+0.001	0.081	+0.079	Pp	pe
954.530	-0.002	0.078		Pp	pe
957.546	0.005	0.075		Pp	pe
967.360	0.002	0.079		Pp	pe

Remarks to Table 1.: Pr = Pracka /1910/; SS = Seares-Shapley /1914,1918/; Ro = Robinson /1930/; Sh = Shapley /1914/ = SS ; Jo = Jordan /1926/ ; Ok = Okunev /1932/; MP = Martin-Plummer /1918/; He = Hellerich /1925/; Pa = Parenago /1930/; Ts= Tsessewich /1931/; La = Lause /1931/; Do = Dombrovski /1935/; So = Soloviev /1935/; Oo = Oosterhoff /1945/; Fa = Fatkina /1950/; Po = Pohl /1953/; Al = Alania /1953/; Ju = Judkina /1953/; Sp= Spinrad /1961/; Ln = Lange /1959/; Ah = Ahnert /1961/; Fi = Fitch /private communication/; Pp = Present paper

Table 2

A few characteristics of the light and colour curves

Epoch of maximum /$JD_\odot$/	ΔV_{max}	ΔB_{max}	ΔV_{min}	ΔB_{min}	/B-V/$_{max}$
2441076	-1.00	-1.40	+0.18	+0.17	-0.40
41084	0.98	1.49	0.20	0.15	0.51
41810	0.95	1.29	-	-	0.34
41835	0.88	1.31	-	-	0.43
42120	-	1.34	-	0.12	-
42128	0.96	1.38	0.22	0.13	0.42
42443	0.91	1.29	-	-	0.38
42449	0.89	1.25	-	-	0.36
42465	0.84	1.24	-	-	0.40
42493	0.95	1.30	-	-	0.35
42532	0.91	1.32	-	-	0.41
42786	1.04	1.40	0.2	0.1	0.36
42870	0.96	1.31	-	-	0.35
42899	0.88	1.31	0.14	0.04	0.43
42905	-	1.22	-	0.04	-
42910	0.83	1.24	0.15	0.08	0.41
42927	0.91	1.28	-	-	0.37
42947	0.88	1.23	-	-	0.35
42964	0.92	1.31	-	-	0.39
43207	1.00	1.40	-	-	0.40
43228	1.00	1.42	-	-	0.42
43251	1.04	1.46	0.22	0.17	0.42
43276	1.00	1.44	-	-	0.44
43288	1.04	1.45	-	-	0.41
43298	1.07	1.49	-	-	0.42
43302	1.03	1.51	-	-	0.48
43304	1.04	1.50	-	-	0.46
43308	1.03	1.46	0.2	0.1	0.43
43580	0.89	1.34	-	-	0.45
43583	0.90	1.30	0.15	0.1	0.40
43596	0.88	1.37	-	-	0.49
43597	0.92	1.39	-	-	0.47
43599	0.88	1.35	-	-	0.47
43608	0.87	1.32	-	-	0.45
43645	0.96	1.36	-	-	0.40
43716	0.98	1.32	-	-	0.34
43727	0.97	1.34	-	-	0.37
43730	0.93	1.40	-	-	0.47
43744	1.00	1.40	-	-	0.40
43931	0.96	1.40	-	-	0.44
43935	0.93	1.34	0.15	0.08	0.41
43954	0.97	1.38	-	-	0.41
43967	0.95	1.39	-	-	0.44

Table 3.

Photoelectric observations of RS Boo

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2436685		2436685		2436697	
.3114	+0.272	.4736	-0.740	.4157	+0.192
.3214	0.262	.4757	0.707	.4208	0.238
.3233	0.193	.4777	0.676	.4229	0.235
.3296	0.254	.4832	0.677	.4250	0.224
.3314	0.228	.4856	0.589	.4299	0.216
.3333	0.236	.5033	0.473	.4317	0.213
.3375	0.239	.5054	0.519	.4338	0.223
.3393	0.249	.5109	0.435	.4403	0.242
.3409	0.248	.5136	0.428	.4421	0.244
.3446	0.253	.5165	0.432	.4440	0.270
.3467	0.222	.5231	0.373	.4493	0.284
.3490	0.236	.5262	0.260	.4514	0.255
.3533	0.233	.5287	0.228	.4535	0.268
.3551	0.234	.5342	0.202	.4587	0.277
.3569	0.240	.5370	0.173	.4611	0.326
.3613	0.225	.5398	0.155	.4632	0.358
.3631	0.228	.5460	0.160	.4688	0.340
.3650	0.248	.5488	0.158	.4708	0.349
.3694	0.276	.5516	0.112	.4729	0.355
.3713	0.233	.5575	0.089	.4778	0.383
.3733	0.288	.5603	0.147	.4799	0.375
.3782	0.246	.5633	0.154	.4820	0.367
.3801	0.263	.5700	0.158	.4868	0.380
.3817	0.259	.5731	0.114	.4889	0.381
.3879	0.304	.5755	0.104	.4910	0.365
.3902	0.294	.5824	0.090	.4955	0.318
.3921	0.308	.5873	0.055	.4976	0.285
.3958	0.269	.5901	0.008	.4991	0.259
.3976	0.283			.5028	0.158
.4000	0.337	2436697		.5042	+0.097
.4042	0.307	.3382	+0.143	.5085	-0.039
.4064	0.323	.3401	0.122	.5099	0.038
.4085	0.300	.3458	0.147	.5113	0.064
.4142	0.291	.3477	0.149	.5148	0.169
.4158	0.279	.3495	0.162	.5162	0.179
.4175	0.241	.3542	0.161	.5176	0.210
.4224	0.184	.3563	0.169	.5203	0.311
.4244	0.153	.3583	0.127	.5217	0.351
.4266	0.146	.3642	0.132	.5231	0.389
.4314	+0.003	.3663	0.127	.5266	0.480
.4343	-0.037	.3684	0.170	.5280	0.485
.4370	0.089	.3750	0.170	.5294	0.529
.4426	0.228	.3771	0.193	.5328	0.585
.4449	0.318	.3792	0.212	.5342	0.601
.4467	0.390	.3963	0.152	.5356	0.628
.4524	0.529	.3982	0.147	.5384	0.655
.4554	0.514	.4030	0.176	.5398	0.649
.4574	0.579	.4049	0.171	.5412	0.642
.4624	0.610	.4067	0.175	.5446	0.664
.4650	0.643	.4120	0.175	.5460	0.666
.4673	0.671	.4139	0.178	.5474	0.666

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2436697		2436728		2441076	
.5509	-0.655	.4858	-0.718	.5151	+0.166
.5523	0.638	.4899	0.741	.5165	0.162
.5537	0.642	.4920	0.714	.5182	0.151
.5579	0.678	.4941	0.655	.5214	0.148
.5593	0.651			.5228	0.132
.5607	0.628	2441056		.5242	0.128
.5649	0.622	.5023	+0.184	.5276	0.123
.5677	0.594	.5037	0.173	.5290	0.110
.5705	0.594	.5051	0.190	.5304	+0.017
.5736	0.558	.5086	0.180	.5332	-0.024
		.5103	0.193	.5342	0.056
2436728		.5120	0.208	.5356	0.084
.3694	+0.253	.5155	0.168	.5387	0.170
.3715	0.244	.5169	0.177	.5415	0.277
.3760	0.242	.5190	0.156	.5446	0.353
.3780	0.290	.5225	0.132	.5460	0.422
.3802	0.271	.5239	0.106	.5473	0.481
.3847	0.256	.5253	0.071	.5498	0.609
.3868	0.271	.5291	+0.019	.5512	0.623
.3889	0.275	.5308	-0.020	.5526	0.658
.3938	0.307	.5322	0.033	.5561	0.747
.3958	0.280	.5353	0.116	.5573	0.806
.3979	0.299	.5367	0.152	.5587	0.837
.4031	0.307	.5381	0.156	.5612	0.867
.4052	0.352	.5412	0.286	.5625	0.915
.4073	0.363	.5426	0.382	.5637	0.911
.4129	0.352	.5440	0.375	.5665	0.967
.4149	0.372	.5468	0.441	.5679	0.970
.4170	0.352	.5482	0.508	.5696	0.960
.4219	0.375	.5496	0.552	.5724	0.998
.4240	0.363	.5526	0.652	.5741	1.010
.4260	0.362	.5540	0.730	.5755	0.978
.4306	0.355	.5557	0.789		
.4326	0.297	.5593	0.886	2441084	
.4347	0.312	.5607	0.883	.4413	+0.213
.4399	0.252	.5621	0.856	.4427	0.191
.4418	0.242	.5635	0.859	.4465	0.173
.4432	0.222	.5669	0.904	.4482	0.171
.4473	0.141	.5683	0.889	.4499	0.156
.4492	0.093	.5732	0.876	.4542	0.107
.4510	+0.025	.5746	0.900	.4559	+0.045
.4559	-0.153	.5773	0.868	.4576	-0.024
.4580	0.202			.4611	0.134
.4601	0.284	2441076		.4628	0.173
.4660	0.440	.4977	+0.218	.4645	0.205
.4681	0.499	.4894	0.234	.4690	0.341
.4701	0.540	.5026	0.158	.4724	0.465
.4737	0.643	.5040	0.165	.4764	0.661
.4756	0.651	.5054	0.175	.4784	0.700
.4774	0.686	.5089	0.189	.4798	0.766
.4816	0.715	.5103	0.169	.4839	0.802
.4837	0.720	.5120	0.178	.4856	0.826

J.D.	ΔV
2441084	
.4875	-0.854
.4917	0.912
.4934	0.935
.4951	0.959
.4992	0.979
.5006	0.979
.5023	0.990
.5062	0.967
.5079	0.978
.5096	0.947
2441810	
.4367	+0.013
.4402	0.016
.4419	+0.039
.4537	-0.073
.4558	0.077
.4592	0.152
.4606	0.206
.4620	0.251
.4658	0.320
.4672	0.375
.4721	0.542
.4738	0.580
.4811	0.787
.4829	0.819
.4870	0.868
.4884	0.904
.4905	0.924
.4940	0.946
.4954	0.951
.4974	0.930
.5009	0.923
.5027	0.934
.5040	0.895
2441835	
.3619	-0.319
.3626	0.333
.3645	0.366
.3658	0.357
.3689	0.537
.3703	0.498
.3716	0.576
.3734	0.635
.3744	0.610
.3758	0.654
.3779	0.688
.3793	0.750
.3807	0.787
.3828	0.784
.3838	0.799
2441835	
.3848	-0.786
.3873	0.840
.3887	0.871
.3921	0.855
.3932	0.827
.3946	0.879
.3970	0.881
.3984	0.862
.4008	0.844
.4019	0.836
2442120	
.6008	+0.181
.6025	0.142
.6057	0.137
.6074	0.189
.6091	0.182
.6119	0.219
.6133	0.224
.6154	0.207
.6209	0.059
.6223	0.071
.6244	0.051
.6279	0.029
.6299	+0.020
.6320	-0.032
.6355	0.091
.6372	0.115
.6386	0.220
.6420	0.311
.6434	0.377
.6455	0.524
.6469	0.554
.6480	0.617
.6503	0.576
.6517	0.621
.6536	0.729
.6563	0.868
.6577	0.918
.6591	0.918
.6615	0.953
.6633	1.001
2442128	
.5249	+0.219
.5270	0.212
.5318	0.215
.5350	0.209
.5389	0.198
.5420	0.183
.5463	0.114
.5487	0.102
2442128	
.5532	+0.006
.5556	-0.080
.5573	0.072
.5598	0.178
.5619	0.226
.5636	0.287
.5685	0.453
.5706	0.516
.5727	0.646
.5768	0.782
.5785	0.836
.5806	0.897
.5844	0.942
.5883	0.948
.5932	0.950
.5953	0.970
.5973	0.960
.6015	0.955
2442443	
.6027	+0.047
.6041	0.074
.6079	0.025
.6093	+0.010
.6131	-0.080
.6149	0.062
.6166	0.043
.6204	0.154
.6225	0.166
.6239	0.270
.6274	0.313
.6295	0.379
.6309	0.398
.6340	0.479
.6350	0.531
.6366	0.538
.6399	0.616
.6413	0.662
.6430	0.706
.6461	0.692
.6472	0.761
.6486	0.841
.6517	0.870
.6541	0.886
.6555	0.855
.6583	0.925
.6600	0.893
.6614	0.895
2442449	
.6355	+0.124
.6376	0.140

J.D.	ΔV
2442449	
.6411	+0.091
.6428	+0.079
.6467	-0.079
.6483	0.097
.6501	0.118
.6555	0.288
.6573	0.327
.6615	0.469
.6628	0.399
.6663	0.512
.6751	0.593
.6761	0.618
.6782	0.654
.6792	0.669
.6803	0.685
.6830	0.753
.6840	0.755
.6867	0.798
.6877	0.816
.6886	0.822
.6911	0.821
.6921	0.841
.6931	0.814
.6950	0.832
.6962	0.853
.6972	0.880
.6996	0.866
2442454	
.5373	+0.156
.5394	0.127
.5432	0.096
.5460	0.094
.5498	0.000
.5515	-0.013
.5550	0.063
.5570	0.056
.5607	0.137
.5625	0.191
.5641	0.210
.5678	0.285
.5696	0.347
.5713	0.389
.5751	0.490
.5769	0.552
.5786	0.584
.5822	0.673
.5840	0.704
.5855	0.695
.5894	0.733
.5910	0.754
.5946	0.793

J.D.	ΔV
2442454	
.5965	-0.833
.5980	0.828
.6019	0.841
.6036	0.852
.6054	0.860
.6089	0.848
.6105	0.866
.6126	0.868
.6167	0.842
.6195	0.786
2442465	
.4833	+0.178
.4847	0.106
.4875	0.087
.4888	0.082
.4919	0.090
.4934	0.062
.4965	0.041
.4979	0.000
.5009	+0.007
.5024	-0.021
.5050	0.087
.5064	0.118
.5076	0.136
.5104	0.170
.5118	0.288
.5128	0.368
.5158	0.424
.5173	0.456
.5187	0.478
.5222	0.557
.5234	0.577
.5250	0.588
.5276	0.653
.5289	0.683
.5305	0.700
.5334	0.749
.5350	0.781
.5361	0.807
.5392	0.840
.5407	0.828
.5419	0.838
.5449	0.822
.5463	0.828
.5478	0.828
.5506	0.825
.5520	0.840
.5534	0.839
.5569	0.833

J.D.	ΔV
2442493	
.4419	-0.458
.4432	0.472
.4457	0.575
.4471	0.594
.4499	0.654
.4512	0.718
.4522	0.736
.4555	0.786
.4572	0.825
.4582	0.844
.4607	0.904
.4628	0.922
.4641	0.948
.4673	0.951
.4688	0.923
.4703	0.916
.4731	0.884
.4742	0.908
.4756	0.901
.4784	0.858
.4798	0.898
.4810	0.864
.4843	0.836
.4867	0.813
.4881	0.793
.4909	0.793
.4923	0.816
2442532	
.3207	-0.736
.3219	0.765
.3230	0.774
.3256	0.793
.3269	0.813
.3283	0.845
.3308	0.890
.3323	0.895
.3338	0.900
.3367	0.914
.3379	0.907
.3393	0.912
.3422	0.901
.3436	0.916
.3450	0.894
.3478	0.864
.3492	0.863
.3506	0.862
.3533	0.819
.3547	0.811
.3561	0.784

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2442786		2442870		2442899	
.5802	+0.184	.4096	-0.326	.4702	-0.609
.5815	0.146	.4103	0.339	.4707	0.617
.5840	0.133	.4131	0.430	.4728	0.616
.5854	0.178	.4144	0.535	.4742	0.642
.5882	0.141	.4162	0.543	.4765	0.719
.5892	0.173	.4183	0.629	.4772	0.724
.5920	0.174	.4206	0.638	.4802	0.776
.5934	0.217	.4228	0.694	.4820	0.788
.5958	0.423	.4239	0.719	.4824	0.806
.5986	0.196	.4253	0.783	.4841	0.811
.6014	0.150	.4273	0.824	.4854	0.838
.6035	0.245	.4284	0.811	.4876	0.855
.6345	+0.007	.4297	0.848	.4897	0.886
.6354	-0.017	.4317	0.905	.4907	0.862
.6364	0.059	.4327	0.884	.4926	0.867
.6386	0.025	.4336	0.791	.4931	0.881
.6396	0.077	.4359	0.957	.4952	0.872
.6406	0.104	.4368	0.963	.4985	0.862
.6431	0.191	.4378	0.950	.4988	0.868
.6444	0.237	.4401	0.921	.5029	0.823
.6454	0.263	.4411	0.773	.5044	0.852
.6479	0.496	.4449	0.867		
.6493	0.366	.4460	0.869	2442905	
.6507	0.484	.4468	0.863	.4615	+0.044
.6530	0.588	.4496	0.848	.4646	0.058
.6541	0.647	.4507	0.835	.4659	0.016
.6562	0.650			.4680	0.050
.6569	0.734	2442899		.4692	+0.040
.6580	0.754	.4188	+0.134	.4716	-0.004
.6589	0.783	.4195	0.143	.4726	-0.004
.6618	0.770	.4221	0.145	.4748	+0.003
.6632	0.786	.4230	0.111	.4759	-0.035
.6641	0.801	.4285	0.156	.4782	0.029
.6666	0.970	.4292	0.097	.4791	0.021
.6677	1.003	.4321	0.091	.4814	0.018
.6691	1.021	.4337	0.128	.4825	0.015
.6715	1.022	.4363	0.146	.4845	0.024
.6729	1.055	.4382	0.091	.4856	0.081
.6739	1.018	.4431	0.000	.4879	0.112
.6764	1.027	.4438	0.033	.4887	0.154
.6781	0.995	.4456	0.049	.4928	0.290
.6791	0.958	.4485	+0.062	.4959	0.282
		.4518	-0.098	.4969	0.406
2442870		.4523	0.103	.5016	0.489
.3965	-0.024	.4542	0.177	.5025	0.492
.3982	0.103	.4556	0.252	.5049	0.574
.4009	0.152	.4577	0.346	.5057	0.571
.4020	0.204	.4584	0.337	.5070	0.618
.4028	0.175	.4637	0.443	.5091	0.585
.4050	0.238	.4641	0.451	.5101	0.640
.4058	0.251	.4657	0.462	.5113	0.686
.4085	0.284	.4685	0.541	.5134	0.710

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2442905		2442910		2442947	
.5143	-0.727	.4328	-0.791	.3733	-0.279
.5153	0.751	.4351	0.820	.3747	0.296
.5178	0.759	.4364	0.845	.3796	0.431
.5186	0.782	.4377	0.831	.3827	0.529
.5195	0.812	.4399	0.827	.3844	0.555
.5210	0.828	.4412	0.823	.3879	0.569
.5219	0.871			.3896	0.614
.5236	0.865	2442927		.3925	0.636
.5259	0.879	.3638	+0.014	.3945	0.683
.5268	0.858	.3648	-0.050	.3986	0.787
.5277	0.864	.3661	0.056	.4001	0.789
.5298	0.846	.3684	0.145	.4036	0.821
.5310	0.851	.3694	0.164	.4053	0.866
.5320	0.852	.3705	0.175	.4086	0.891
.5342	0.862	.3728	0.215	.4108	0.852
.5351	0.877	.3738	0.242	.4136	0.862
.5363	0.868	.3751	0.243	.4158	0.855
		.3775	0.247	.4187	0.777
2442910		.3786	0.259	.4201	0.758
.3691	+0.145	.3798	0.276	.4234	0.765
.3703	0.119	.3821	0.321	.4247	0.763
.3728	0.085	.3833	0.349	.4282	0.775
.3741	0.128	.3843	0.406	.4297	0.745
.3776	0.046	.3868	0.470		
.3783	0.112	.3883	0.501	2442964	
.3811	+0.051	.3896	0.564	.3624	-0.479
.3825	-0.015	.3922	0.551	.3633	0.539
.3832	-0.007	.3935	0.600	.3655	0.580
.3859	+0.023	.3948	0.614	.3666	0.569
.3873	+0.006	.3971	0.653	.3675	0.587
.3887	-0.011	.3982	0.684	.3697	0.628
.3914	0.075	.3996	0.723	.3707	0.656
.3929	0.063	.4021	0.826	.3718	0.669
.3942	0.154	.4034	0.819	.3740	0.739
.3968	0.200	.4045	0.843	.3750	0.759
.3981	0.200	.4073	0.878	.3762	0.784
.3995	0.253	.4084	0.896	.3784	0.805
.4023	0.351	.4097	0.912	.3793	0.816
.4035	0.396	.4121	0.902	.3805	0.844
.4049	0.420	.4132	0.908	.3829	0.804
.4094	0.500	.4144	0.883	.3838	0.833
.4123	0.563	.4168	0.867	.3857	0.895
.4143	0.635	.4179	0.837	.3869	0.904
.4155	0.660			.3878	0.895
.4165	0.689	2442947		.3902	0.940
.4189	0.740	.3514	+0.102	.3912	0.881
.4203	0.744	.3527	-0.005	.3934	0.872
.4241	0.816	.3549	-0.022	.3943	0.878
.4253	0.796	.3562	+0.035	.3964	0.842
.4268	0.799	.3601	-0.062	.3974	0.886
.4290	0.806	.3634	0.129	.3999	0.839
.4314	0.805	.3664	0.147	.4008	0.840

J.D.	ΔV
2442964	
.4028	-0.838
.4037	0.815
.4058	0.792
.4068	0.814
.4089	0.791
.4100	0.780
2443207	
.3880	-0.762
.3907	0.801
.3919	0.846
.3931	0.962
.3958	0.977
.3971	0.996
.3981	0.993
.4012	0.970
.4024	0.977
.4035	0.986
.4063	0.991
.4077	0.984
.4091	0.980
.4117	0.955
.4131	0.952
.4145	0.969
.4174	0.970
.4188	0.942
.4202	0.924
.4232	0.893
.4246	0.875
.4278	0.858
.4291	0.864
2443228	
.4919	+0.194
.4929	0.194
.4952	0.068
.4967	0.071
.4986	+0.078
.5001	-0.063
.5013	0.074
.5037	0.226
.5049	0.171
.5060	0.142
.5086	0.241
.5096	0.284
.5107	0.347
.5130	0.449
.5139	0.503
.5151	0.513
.5174	0.635
.5186	0.725

J.D.	ΔV
2443228	
.5195	-0.737
.5221	0.792
.5231	0.808
.5242	0.811
.5265	0.872
.5277	0.901
.5287	0.889
.5309	0.967
.5322	0.968
.5332	0.994
.5354	0.999
.5367	1.017
.5377	0.990
.5401	0.993
.5414	1.005
.5423	0.989
.5457	0.897
.5471	0.946
.5481	0.894
2443251	
.5010	+0.235
.5023	0.212
.5037	0.180
.5064	0.196
.5076	0.191
.5092	0.214
.5122	0.162
.5135	0.115
.5148	0.076
.5175	0.061
.5185	+0.061
.5197	-0.036
.5229	0.120
.5240	0.167
.5253	0.160
.5283	0.303
.5295	0.366
.5308	0.307
.5337	0.539
.5350	0.517
.5364	0.550
.5395	0.768
.5406	0.771
.5418	0.826
.5447	0.908
.5460	0.921
.5472	0.960
.5502	0.979
.5514	1.037
.5525	1.012

J.D.	ΔV
2443251	
.5554	-1.048
.5569	1.055
.5597	1.005
.5611	1.015
2443276	
.4515	-0.992
.4526	1.001
.4543	1.000
.4567	0.998
.4581	1.014
.4595	0.976
.4630	0.979
.4644	0.987
.4654	0.980
.4678	0.962
.4692	0.947
.4734	0.894
.4748	0.897
.4762	0.877
.4790	0.840
.4800	0.829
.4810	0.866
2443288	
.5117	-0.506
.5126	0.570
.5135	0.611
.5153	0.641
.5163	0.721
.5177	0.751
.5198	0.828
.5206	0.865
.5215	0.867
.5239	0.954
.5250	0.970
.5260	1.007
.5281	1.017
.5290	1.029
.5302	1.042
.5323	1.041
.5333	1.055
.5342	1.035
.5366	1.015
.5376	1.043
.5385	1.043
.5406	1.006
.5417	0.997
.5429	1.004
.5448	0.983
.5458	0.956

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2443298		2443304		2443308	
.3447	-1.057	.3636	-0.514	.5338	-1.027
.3454	1.083	.3657	0.612	.5348	1.039
.3465	1.064	.3669	0.722	.5371	0.992
.3482	1.042	.3688	0.765	.5378	0.957
.3491	1.049	.3698	0.774	.5391	0.958
.3499	1.021	.3722	0.912		
.3517	1.041	.3732	0.908	2443580	
.3526	1.038	.3757	0.904	.5453	+0.040
.3534	1.037	.3767	0.966	.5460	-0.030
.3555	1.008	.3778	1.008	.5476	0.204
.3564	0.989	.3809	1.033	.5484	0.212
.3576	0.961	.3819	1.040	.5502	0.348
.3595	0.933	.3841	1.034	.5510	0.333
.3606	0.892	.3853	1.035	.5527	0.363
.3616	0.805	.3862	1.014	.5535	0.356
.3635	0.813	.3886	1.009	.5543	0.385
.3645	0.799	.3897	0.987	.5559	0.415
.3659	0.849	.3908	0.941	.5566	0.477
				.5583	0.501
2443302		2443308		.5591	0.495
.4746	-0.501	.4816	+0.210	.5639	0.572
.4754	0.559	.4825	0.200	.5647	0.663
.4765	0.584	.4850	0.060	.5666	0.659
.4786	0.653	.4862	0.026	.5678	0.714
.4796	0.691	.4886	0.037	.5698	0.727
.4803	0.723	.4898	0.060	.5738	0.779
.4823	0.797	.4908	+0.066	.5761	0.835
.4831	0.835	.4936	-0.008	.5771	0.864
.4839	0.893	.4947	0.021	.5789	0.859
.4857	0.865	.4958	0.019	.5801	0.833
.4868	0.911	.4982	0.075	.5823	0.850
.4876	0.933	.4996	0.053	.5835	0.870
.4892	0.992	.5006	0.114	.5856	0.861
.4899	1.011	.5033	0.196	.5865	0.882
.4909	1.051	.5045	0.222	.5889	0.884
.4927	1.015	.5054	0.266	.5929	0.908
.4936	1.027	.5082	0.402	.5942	0.874
.4944	1.014	.5094	0.424	.5964	0.850
.4966	0.983	.5106	0.451	.5976	0.850
.4975	0.987	.5133	0.666	.5994	0.819
.4983	0.985	.5145	0.708	.6007	0.791
.5003	0.980	.5156	0.728	.6036	0.812
.5012	0.993	.5187	0.747		
		.5197	0.805	2443583	
2443304		.5207	0.830	.5378	+0.147
.3521	-0.096	.5232	0.862	.5403	0.163
.3531	0.161	.5243	0.893	.5415	0.124
.3556	0.315	.5252	0.910	.5427	0.135
.3567	0.387	.5277	0.973	.5459	0.138
.3591	0.413	.5290	0.966	.5486	0.103
.3604	0.377	.5302	1.002	.5511	0.111
.3627	0.471	.5326	1.027	.5525	0.113

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2443583		2443597		2443599	
.5537	+0.115	.5255	-0.073	.4231	-0.448
.5584	+0.003	.5266	0.091	.4260	0.541
.5723	-0.431	.5294	0.136	.4282	0.549
.5733	0.418	.5306	0.166	.4305	0.632
.5743	0.437	.5319	0.301	.4326	0.716
.5767	0.458	.5345	0.375	.4337	0.730
.5778	0.494	.5358	0.375	.4349	0.737
.5787	0.526	.5370	0.444	.4371	0.743
.5809	0.584	.5397	0.584	.4381	0.757
.5822	0.615	.5407	0.623	.4392	0.794
.5831	0.632	.5419	0.599	.4415	0.868
.5857	0.773	.5442	0.647	.4424	0.868
.5868	0.798	.5455	0.678	.4436	0.891
.5915	0.856	.5468	0.682	.4462	0.867
.5938	0.857	.5490	0.712	.4485	0.825
.5948	0.892	.5502	0.761	.4506	0.848
.6017	0.881	.5516	0.825	.4517	0.813
.6052	0.897	.5538	0.857	.4529	0.847
		.5551	0.877	.4550	0.803
2443596		.5562	0.907	.4561	0.852
.4016	-0.393	.5586	0.939	.4572	0.817
.4030	0.476	.5595	0.912	.4612	0.827
.4061	0.474	.5610	0.895	.4649	0.787
.4075	0.562	.5635	0.889	.4658	0.773
.4103	0.563	.5649	0.891		
.4115	0.663	.5662	0.886	2443608	
.4148	0.671	.5683	0.860	.4580	+0.091
.4160	0.651	.5704	0.886	.4605	+0.038
.4189	0.667	.5718	0.856	.4614	-0.039
.4203	0.722	.5740	0.851	.4639	0.007
.4249	0.822	.5752	0.802	.4649	0.056
.4297	0.866			.4675	0.094
.4347	0.827	2443599		.4685	0.147
.4358	0.882	.3881	+0.172	.4716	0.166
.4394	0.879	.3923	0.136	.4728	0.232
.4427	0.855	.3947	0.055	.4761	0.257
.4438	0.888	.3960	0.063	.4772	0.282
.4464	0.882	.3985	+0.035	.4798	0.405
.4474	0.911	.3998	-0.019	.4808	0.428
.4495	0.904	.4007	+0.019	.4830	0.464
		.4029	-0.011	.4841	0.500
2443597		.4043	0.025	.4867	0.590
.5051	+0.237	.4054	0.029	.4878	0.613
.5060	0.162	.4077	0.044	.4903	0.700
.5087	0.105	.4087	0.040	.4914	0.766
.5101	0.106	.4100	0.102	.4951	0.787
.5111	0.082	.4135	0.252	.4986	0.749
.5139	0.045	.4145	0.266	.5042	0.841
.5164	+0.001	.4157	0.274	.5052	0.896
.5201	-0.087	.4183	0.393	.5073	0.869
.5212	0.085	.4196	0.396	.5121	0.860
.5236	0.079	.4208	0.413	.5147	0.885

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2443608		2443716		2443730	
.5156	-0.859	.3933	+0.024	.3703	-0.364
		.3949	+0.023	.3725	0.473
2443645		.3977	-0.055	.3735	0.485
.4691	-0.676	.3989	0.077	.3748	0.578
.4699	0.681	.4030	0.205	.3773	0.590
.4736	0.720	.4048	0.244	.3786	0.675
.4748	0.819	.4079	0.363	.3798	0.752
.4770	0.806	.4093	0.479	.3823	0.827
.4781	0.873	.4105	0.573	.3833	0.818
.4821	0.914	.4133	0.706	.3846	0.833
.4850	0.889	.4147	0.761	.3874	0.882
.4864	0.906	.4178	0.853	.3887	0.879
.4890	0.958	.4190	0.906	.3898	0.889
.4904	0.955	.4204	0.916	.3929	0.906
.4935	0.972	.4236	0.982	.3936	0.924
.4949	0.901	.4248	0.996	.3947	0.922
.4977	0.890	.4280	0.930	.3971	0.915
.4991	0.958	.4291	0.949	.3984	0.941
.5017	0.906	.4302	0.917		
.5029	0.880			2443744	
.5060	0.848	2443727		.3235	-0.039
.5071	0.821	.3393	-0.011	.3263	0.238
.5104	0.840	.3419	0.131	.3277	0.173
.5118	0.797	.3430	0.222	.3303	0.461
		.3462	0.258	.3315	0.534
2443659		.3475	0.343	.3326	0.627
.4237	-0.319	.3507	0.376	.3369	0.771
.4245	0.362	.3525	0.452	.3381	0.762
.4277	0.434	.3600	0.787	.3405	0.778
.4287	0.479	.3653	0.835	.3418	0.830
.4305	0.542	.3683	0.921	.3428	0.839
.4314	0.587	.3722	0.923	.3457	0.781
.4332	0.621	.3738	0.949	.3471	0.783
.4343	0.635	.3766	0.813	.3485	0.862
.4364	0.621	.3780	0.997	.3511	0.840
.4372	0.696	.3812	0.957	.3525	0.988
.4393	0.790	.3826	0.933	.3566	1.015
.4407	0.827	.3869	0.952	.3579	0.995
.4440	0.876			.3626	0.985
.4471	0.876	2443730		.3641	1.022
.4502	0.908	.3482	+0.044		
		.3493	0.067	2443931	
2443716		.3520	+0.028	.4398	+0.084
.3683	+0.209	.3533	-0.008	.4412	0.098
.3697	0.178	.3558	+0.004	.4540	0.104
.3735	0.232	.3571	-0.026	.4554	0.126
.3749	0.198	.3600	0.093	.4586	0.071
.3780	0.187	.3621	0.095	.4599	0.077
.3794	0.227	.3645	0.232	.4634	0.019
.3860	0.187	.3658	0.289	.4648	+0.022
.3890	0.150	.3676	0.362	.4679	-0.021
.3905	0.169	.3690	0.401	.4693	0.028

J.D.	ΔV
2443931	
.4724	-0.077
.4752	0.164
.4780	0.169
.4794	0.256
.4808	0.242
.4836	0.284
.4852	0.352
.4870	0.448
.4898	0.480
.4905	0.541
.4919	0.531
.4947	0.562
.4959	0.554
.4972	0.615
.5002	0.687
.5018	0.673
.5033	0.655
.5065	0.762
.5079	0.747
.5093	0.799
.5140	0.941
.5152	0.958
.5165	0.963
.5193	0.944
.5208	0.923
.5221	0.916
2443935	
.5888	+0.075
.5900	0.133
.5919	0.144
.5940	0.217
.5958	0.176
.5973	0.177
.6015	0.109
.6026	0.102
.6045	0.134
.6061	0.078
.6079	0.093
.6091	0.032
.6110	0.067
.6119	0.060
.6137	0.051
.6144	0.051
.6162	0.036
.6173	+0.007
.6220	-0.079
.6231	0.107
.6249	0.068
.6261	0.138
.6280	0.160
.6290	0.138

J.D.	ΔV
2443935	
.6309	-0.170
.6318	0.162
.6336	0.303
.6344	0.313
.6364	0.394
.6374	0.375
.6390	0.420
.6400	0.477
.6421	0.528
.6432	0.574
.6451	0.634
.6460	0.640
.6477	0.647
.6489	0.699
.6509	0.766
.6519	0.744
.6536	0.808
.6544	0.804
.6562	0.861
.6569	0.861
.6584	0.865
.6591	0.875
.6607	0.908
.6616	0.928
.6631	0.929
.6640	0.936
.6655	0.943
.6665	0.904
.6716	0.866
.6731	0.868
.6738	0.822
2443954	
.4979	-0.307
.4997	0.391
.5046	0.379
.5060	0.454
.5076	0.551
.5100	0.649
.5112	0.663
.5126	0.692
.5153	0.731
.5164	0.767
.5180	0.792
.5206	0.817
.5222	0.863
.5236	0.861
.5264	0.952
.5275	0.936
.5291	0.985
.5317	0.964
.5330	0.965

J.D.	ΔV
2443954	
.5345	-0.911
.5372	0.876
.5390	0.862
.5428	0.807
2443957	
.4779	+0.272
.4815	0.206
.4827	0.176
.4859	0.148
.4908	0.128
.4934	0.067
.4944	0.064
.4985	+0.055
.4997	-0.008
.5008	+0.031
.5032	+0.049
.5043	-0.023
.5065	0.053
.5076	0.144
.5103	0.181
.5113	0.176
.5143	0.192
.5154	0.260
.5178	0.376
.5192	0.365
.5202	0.417
.5237	0.446
.5249	0.472
.5274	0.554
.5289	0.560
.5298	0.652
.5326	0.678
.5340	0.742
.5349	0.737
.5389	0.810
.5403	0.885
.5430	0.882
.5444	0.856
.5458	0.890
.5494	0.878
.5507	0.852
2443967	
.3260	-0.129
.3270	0.086
.3304	0.264
.3316	0.267
.3329	0.382
.3356	0.480
.3370	0.505
.3408	0.607

J.D.	ΔV	J.D.	ΔV	J.D.	ΔV
2443967		2443967		2443967	
.3418	-0.675	.3513	-0.846	.3621	-0.911
.3441	0.715	.3534	0.836	.3631	0.901
.3453	0.703	.3549	0.868	.3654	0.838
.3465	0.727	.3569	0.966	.3664	0.823
.3491	0.768	.3580	0.932	.3805	0.707
.3502	0.812	.3590	0.942	.3814	0.735
		.3610	0.930		

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2436685		2436685		2436697	
.3106	+0.006	.4356	-0.513	.3531	-0.069
.3206	-0.026	.4413	0.763	.3552	0.053
.3223	0.025	.4435	0.793	.3573	0.078
.3261	-0.022	.4458	0.863	.3632	0.083
.3305	+0.001	.4515	1.051	.3653	0.083
.3322	0.017	.4533	1.114	.3674	0.070
.3364	0.033	.4564	1.181	.3740	0.013
.3384	0.033	.4641	1.284	.3761	0.062
.3402	0.040	.4662	1.338	.3781	0.051
.3437	0.070	.4726	1.338	.3954	0.072
.3456	0.028	.4745	1.336	.3972	0.059
.3479	0.008	.4766	1.302	.4021	0.047
.3522	0.056	.4822	1.331	.4039	-0.021
.3544	0.036	.4842	1.240	.4058	+0.001
.3560	0.026	.4868	1.160	.4109	0.040
.3603	+0.016	.5044	1.026	.4130	0.034
.3622	-0.005	.5099	0.927	.4148	0.039
.3641	-0.001	.5123	0.987	.4199	0.039
.3680	+0.026	.5148	0.956	.4218	0.035
.3703	0.025	.5273	0.716	.4241	0.020
.3724	0.026	.5328	0.607	.4289	0.027
.3770	0.035	.5356	0.587	.4308	0.026
.3791	0.053	.5384	0.567	.4329	0.021
.3810	0.032	.5443	0.491	.4391	0.090
.3870	0.077	.5473	0.579	.4412	0.096
.3891	0.073	.5498	0.502	.4431	0.105
.3912	0.068	.5589	0.462	.4482	0.095
.3949	0.064	.5679	0.361	.4502	0.091
.3967	0.108	.5714	0.404	.4524	0.108
.3990	0.067	.5741	0.372	.4579	0.115
.4033	0.110	.5797	0.362	.4601	0.108
.4055	+0.097	.5853	0.288	.4622	0.113
.4130	-0.012	.5887	0.262	.4677	0.174
.4151	+0.003			.4698	0.170
.4166	+0.003	2436697		.4719	0.175
.4212	-0.060	.3373	-0.087	.4767	0.157
.4234	0.106	.3391	0.077	.4788	0.174
.4256	0.126	.3449	0.085	.4809	0.167
.4301	0.304	.3468	0.084	.4858	0.085
.4327	0.401	.3486	0.081	.4879	0.086

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2436697		2436728		2441056	
.4899	+0.077	.4042	+0.107	.5419	-0.525
.4948	0.058	.4062	0.127	.5433	0.591
.4965	0.025	.4118	0.123	.5461	0.759
.4984	+0.011	.4139	0.195	.5474	0.811
.5019	-0.116	.4160	0.160	.5489	0.903
.5033	0.158	.4208	0.159	.5519	1.004
.5049	0.204	.4229	0.161	.5533	1.033
.5078	0.272	.4250	0.161	.5547	1.101
.5092	0.307	.4295	0.139	.5586	1.200
.5106	0.336	.4316	0.113	.5600	1.235
.5141	0.455	.4337	+0.057	.5614	1.248
.5155	0.481	.4389	-0.037	.5628	1.250
.5169	0.548	.4409	0.039	.5662	1.324
.5196	0.665	.4425	0.046	.5676	1.339
.5210	0.708	.4464	0.122	.5725	1.295
.5224	0.760	.4483	0.168	.5739	1.327
.5259	0.853	.4501	0.242	.5766	1.316
.5273	0.907	.4549	0.425		
.5287	0.939	.4569	0.527	2441076	
.5321	1.048	.4590	0.618	.4970	+0.156
.5335	1.060	.4649	0.860	.4987	0.172
.5349	1.112	.4670	0.927	.5017	0.131
.5377	1.197	.4691	0.962	.5033	0.158
.5391	1.182	.4728	1.053	.5047	0.159
.5405	1.178	.4747	1.090	.5082	0.142
.5439	1.202	.4765	1.109	.5096	0.142
.5453	1.198	.4806	1.169	.5110	0.140
.5467	1.217	.4826	1.184	.5144	0.095
.5502	1.192	.4847	1.190	.5158	0.075
.5516	1.190	.4889	1.239	.5172	0.071
.5530	1.182	.4910	1.245	.5207	0.073
.5572	1.152	.4931	1.177	.5221	0.066
.5586	1.138			.5235	0.029
.5600	1.131	2441056		.5265	+0.029
.5636	1.137	.5030	+0.121	.5283	-0.005
.5663	1.118	.5044	0.118	.5297	0.067
.5691	1.105	.5079	0.113	.5325	0.124
.5719	1.098	.5093	0.103	.5336	0.164
		.5113	0.101	.5349	0.260
2436728		.5148	0.115	.5380	0.377
.3684	+0.031	.5162	0.079	.5394	0.419
.3705	0.031	.5183	0.068	.5408	0.457
.3750	0.052	.5218	0.035	.5489	0.584
.3771	0.047	.5232	0.027	.5453	0.650
.3792	0.050	.5246	+0.016	.5467	0.728
.3837	0.091	.5284	-0.067	.5491	0.860
.3858	0.087	.5298	0.117	.5505	0.912
.3879	0.101	.5315	0.155	.5519	0.993
.3927	0.096	.5343	0.249	.5554	1.082
.3948	0.057	.5360	0.284	.5568	1.124
.3969	0.122	.5374	0.337	.5580	1.171
.4021	0.090	.5405	0.454	.5619	1.311

J.D.	ΔB
2441076	
.5631	-1.333
.5644	1.327
.5672	1.365
.5686	1.374
.5703	1.383
.5734	1.404
.5748	1.388
.5762	1.385
2441084	
.4403	+0.127
.4420	0.107
.4458	0.082
.4475	0.073
.4492	+0.075
.4535	-0.037
.4552	0.070
.4566	0.110
.4604	0.248
.4621	0.325
.4635	0.376
.4683	0.597
.4700	0.647
.4714	0.690
.4757	0.900
.4774	0.982
.4791	1.038
.4829	1.131
.4846	1.210
.4864	1.272
.4910	1.358
.4924	1.393
.4944	1.397
.4982	1.388
.4999	1.381
.5016	1.372
.5069	1.399
.5089	1.402
.5103	1.355
2441810	
.4339	+0.079
.4356	0.039
.4395	+0.003
.4412	-0.040
.4426	0.062
.4530	0.257
.4544	0.279
.4565	0.322
.4599	0.469
.4613	0.528
.4631	0.593
2441810	
.4665	-0.680
.4679	0.700
.4693	0.740
.4728	0.863
.4745	0.887
.4801	1.129
.4822	1.148
.4839	1.183
.4877	1.252
.4895	1.261
.4912	1.264
.4947	1.296
.4961	1.276
.4981	1.290
.5016	1.262
.5033	1.239
.5051	1.202
2441835	
.3612	-0.514
.3623	0.563
.3640	0.586
.3651	0.636
.3682	0.723
.3696	0.755
.3710	0.787
.3730	0.794
.3741	0.869
.3751	0.922
.3774	0.983
.3786	1.017
.3800	1.055
.3824	1.107
.3832	1.113
.3844	1.136
.3866	1.177
.3880	1.227
.3914	1.263
.3927	1.274
.3939	1.287
.3963	1.296
.3977	1.305
.4001	1.301
.4013	1.303
2442120	
.6001	+0.100
.6015	0.106
.6050	0.026
.6064	0.051
.6084	0.114
.6112	0.141
2442120	
.6126	+0.131
.6140	0.098
.6202	+0.012
.6216	-0.003
.6233	0.018
.6272	0.051
.6286	0.050
.6309	0.112
.6348	0.277
.6365	0.331
.6379	0.389
.6451	0.566
.6427	0.649
.6448	0.747
.6462	0.868
.6476	0.902
.6497	0.970
.6511	0.980
.6527	1.032
.6556	1.209
.6570	1.230
.6584	1.273
.6612	1.333
.6626	1.332
.6640	1.336
2442128	
.5242	+0.125
.5263	0.136
.5311	0.110
.5343	0.126
.5389	0.076
.5413	+0.068
.5463	-0.019
.5480	+0.023
.5525	-0.118
.5549	0.186
.5566	0.238
.5605	0.397
.5626	0.466
.5641	0.580
.5692	0.790
.5713	0.899
.5734	0.993
.5775	1.160
.5792	1.220
.5813	1.260
.5851	1.316
.5869	1.333
.5890	1.362
.5939	1.376
.5960	1.385

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2442128		2442449		2442465	
.5978	-1.378	.6916	-1.222	.5016	-0.232
		.6927	1.223	.5044	0.258
2442443		.6935	1.221	.5059	0.310
.6020	+0.029	.6955	1.242	.5069	0.342
.6034	0.014	.6967	1.226	.5099	0.445
.6072	+0.031	.6976	1.258	.5111	0.494
.6086	-0.007	.7001	1.221	.5123	0.547
.6121	0.050			.5152	0.660
.6142	0.116	2442454		.5166	0.686
.6156	0.127	.5366	+0.055	.5180	0.726
.6197	0.268	.5387	0.034	.5215	0.859
.6215	0.345	.5425	+0.037	.5229	0.888
.6232	0.376	.5453	-0.001	.5243	0.936
.6270	0.521	.5491	0.025	.5270	0.998
.6288	0.617	.5509	0.060	.5283	1.024
.6305	0.640	.5544	0.130	.5296	1.069
.6333	0.761	.5564	0.185	.5328	1.113
.6343	0.776	.5600	0.289	.5343	1.126
.6361	0.812	.5618	0.348	.5355	1.141
.6392	0.937	.5637	0.400	.5385	1.185
.6406	0.998	.5671	0.501	.5398	1.206
.6420	0.994	.5689	0.583	.5412	1.219
.6451	1.079	.5706	0.629	.5442	1.236
.6465	1.081	.5744	0.732	.5456	1.243
.6479	1.177	.5762	0.816	.5471	1.253
.6510	1.261	.5780	0.885	.5500	1.242
.6531	1.271	.5816	1.003	.5513	1.240
.6548	1.254	.5833	0.999	.5527	1.217
.6576	1.293	.5850	1.036	.5562	1.185
.6593	1.290	.5887	1.102		
.6607	1.286	.5904	1.128	2442493	
		.5941	1.175	.4412	-0.673
2442449		.5960	1.194	.4426	0.729
.6349	+0.040	.5975	1.199	.4450	0.878
.6369	0.011	.6012	1.244	.4464	0.901
.6407	+0.003	.6030	1.252	.4492	1.000
.6477	-0.152	.6049	1.255	.4506	1.022
.6494	0.220	.6085	1.244	.4516	1.062
.6532	0.435	.6100	1.240	.4548	1.160
.6549	0.468	.6116	1.220	.4565	1.194
.6567	0.496	.6158	1.204	.4577	1.234
.6672	0.808	.6188	1.153	.4600	1.243
.6756	0.920			.4619	1.259
.6766	0.958	2442465		.4634	1.283
.6789	1.019	.4826	+0.115	.4666	1.298
.6798	1.041	.4840	0.075	.4680	1.301
.6808	1.060	.4868	+0.009	.4694	1.308
.6835	1.113	.4881	-0.012	.4721	1.301
.6844	1.132	.4912	0.025	.4735	1.288
.6872	1.136	.4927	0.016	.4749	1.281
.6881	1.138	.4956	0.070	.4779	1.255
.6892	1.193	.4972	0.136	.4791	1.241

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2442493		2442786		2442870	
.4805	-1.231	.6486	-0.639	.4491	-1.224
.4829	1.219	.6500	0.670	.4503	1.223
.4857	1.204	.6524	0.820		
.4874	1.208	.6535	0.807	2442899	
.4903	1.170	.6545	0.835	.4181	+0.025
.4916	1.155	.6566	1.037	.4200	0.007
		.6576	1.052	.4221	0.036
2442532		.6584	1.086	.4225	0.054
.3201	-1.040	.6611	1.186	.4277	0.039
.3213	1.078	.6625	1.238	.4285	0.036
.3225	1.101	.6639	1.264	.4329	+0.014
.3249	1.159	.6661	1.342	.4358	-0.066
.3263	1.238	.6673	1.353	.4375	0.086
.3275	1.289	.6684	1.355	.4424	0.124
.3315	1.324	.6708	1.379	.4451	0.200
.3331	1.300	.6721	1.400	.4478	0.258
.3374	1.259	.6732	1.397	.4511	0.343
.3386	1.268	.6760	1.400	.4529	0.366
.3414	1.288	.6771	1.381	.4549	0.410
.3429	1.309	.6787	1.366	.4553	0.434
.3442	1.263			.4562	0.510
.3471	1.266	2442870		.4591	0.560
.3485	1.274	.3975	-0.297	.4610	0.594
.3499	1.265	.4003	0.299	.4615	0.581
.3525	1.227	.4014	0.338	.4633	0.706
.3540	1.220	.4023	0.405	.4648	0.765
.3554	1.205	.4044	0.425	.4674	0.885
		.4055	0.463	.4680	0.894
2442786		.4090	0.554	.4697	0.904
.5799	+0.034	.4100	0.617	.4711	0.955
.5809	0.041	.4110	0.688	.4732	0.984
.5837	0.017	.4138	0.773	.4737	1.003
.5848	0.017	.4152	0.819	.4777	1.106
.5875	0.064	.4159	0.815	.4795	1.157
.5889	0.087	.4200	0.994	.4798	1.153
.5913	0.104	.4211	1.023	.4814	1.177
.5926	0.092	.4232	1.096	.4827	1.219
.5951	0.097	.4246	1.134	.4846	1.217
.5965	0.094	.4257	1.145	.4849	1.242
.5979	0.103	.4279	1.219	.4867	1.281
.6007	0.099	.4291	1.260	.4880	1.325
.6028	+0.079	.4301	1.258	.4900	1.308
.6340	-0.115	.4322	1.278	.4904	1.302
.6351	0.123	.4332	1.289	.4922	1.303
.6361	0.156	.4364	1.317	.4936	1.302
.6380	0.227	.4374	1.316	.4957	1.259
.6389	0.247	.4382	1.289	.4960	1.265
.6399	0.321	.4405	1.250	.4980	1.240
.6427	0.403	.4415	1.241	.4994	1.235
.6438	0.439	.4444	1.243	.5019	1.200
.6448	0.466	.4454	1.241	.5023	1.220
.6472	0.613	.4464	1.227	.5040	1.200

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2442899		2442910		2442927	
.5053	-1.197	.3686	+0.033	.3827	-0.624
		.3696	0.074	.3839	0.677
2442905		.3721	0.057	.3861	0.743
.4608	+0.037	.3734	+0.071	.3878	0.790
.4619	-0.007	.3769	-0.033	.3889	0.836
.4639	+0.039	.3804	0.071	.3914	0.878
.4674	0.004	.3818	0.106	.3927	0.931
.4687	0.023	.3866	0.143	.3941	0.981
.4709	+0.010	.3880	0.197	.3965	1.080
.4720	-0.001	.3894	0.235	.3977	1.099
.4744	0.038	.3922	0.281	.3989	1.138
.4754	0.008	.3936	0.277	.4016	1.174
.4777	0.024	.3949	0.328	.4027	1.178
.4786	0.065	.3974	0.390	.4039	1.198
.4808	0.091	.3988	0.415	.4062	1.229
.4841	0.189	.4002	0.488	.4080	1.258
.4851	0.218	.4030	0.605	.4090	1.266
.4873	0.283	.4040	0.681	.4115	1.279
.4884	0.291	.4057	0.753	.4127	1.274
.4893	0.333	.4085	0.859	.4139	1.271
.4917	0.354	.4116	0.909	.4163	1.270
.4928	0.379	.4137	0.855	.4173	1.256
.4954	0.508	.4149	0.973		
.4965	0.522	.4159	0.985	2442947	
.4973	0.563	.4184	1.056	.3508	-0.028
.4996	0.690	.4197	1.087	.3521	0.044
.5011	0.730	.4210	1.106	.3542	0.031
.5020	0.719	.4234	1.170	.3556	0.056
.5042	0.812	.4248	1.179	.3584	0.147
.5053	0.848	.4261	1.194	.3598	0.122
.5063	0.864	.4287	1.191	.3619	0.282
.5084	0.936	.4321	1.243	.3629	0.280
.5097	0.959	.4346	1.239	.3726	0.516
.5108	0.988	.4359	1.249	.3740	0.551
.5129	1.035	.4370	1.236	.3758	0.639
.5138	1.040	.4392	1.244	.3786	0.692
.5148	1.057	.4405	1.223	.3821	0.787
.5173	1.109			.3834	0.806
.5181	1.170	2442927		.3869	0.865
.5192	1.186	.3628	-0.057	.3888	0.974
.5205	1.196	.3643	0.109	.3920	1.039
.5216	1.199	.3656	0.169	.3935	1.082
.5225	1.217	.3678	0.253	.3969	1.102
.5254	1.217	.3687	0.278	.3994	1.125
.5263	1.221	.3700	0.335	.4028	1.171
.5271	1.215	.3723	0.362	.4043	1.194
.5293	1.222	.3733	0.418	.4079	1.205
.5305	1.219	.3746	0.429	.4096	1.234
.5314	1.213	.3768	0.482	.4129	1.237
.5337	1.194	.3781	0.477	.4148	1.225
.5348	1.220	.3791	0.502	.4181	1.154
.5358	1.224	.3816	0.609	.4196	1.139

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2442947		2443207		2443251	
.4229	-1.138	.4084	-1.375	.5003	+0.169
.4240	1.148	.4097	1.392	.5017	0.139
.4275	1.142	.4124	1.350	.5030	0.117
.4291	1.123	.4138	1.355	.5058	0.065
		.4152	1.367	.5069	0.070
2442964		.4183	1.359	.5083	0.075
.3617	-0.727	.4195	1.348	.5115	0.032
.3630	0.777	.4209	1.312	.5129	+0.026
.3650	0.840	.4239	1.290	.5142	-0.020
.3660	0.886	.4253	1.292	.5170	0.095
.3671	0.887	.4285	1.242	.5180	0.110
.3691	0.925	.4298	1.222	.5190	0.178
.3701	0.968			.5222	0.273
.3713	0.988	2443228		.5234	0.320
.3734	1.042	.4914	+0.064	.5246	0.339
.3746	1.090	.4926	0.079	.5277	0.498
.3756	1.090	.4947	+0.012	.5289	0.571
.3777	1.159	.4958	-0.014	.5302	0.557
.3789	1.180	.4981	0.105	.5332	0.764
.3799	1.211	.4995	0.152	.5344	0.801
.3823	1.211	.5006	0.157	.5357	0.828
.3832	1.247	.5032	0.219	.5385	1.056
.3853	1.290	.5044	0.289	.5400	1.118
.3863	1.305	.5055	0.315	.5413	1.146
.3874	1.301	.5081	0.469	.5439	1.276
.3897	1.314	.5093	0.500	.5453	1.286
.3908	1.312	.5101	0.589	.5465	1.358
.3926	1.292	.5124	0.652	.5496	1.430
.3938	1.295	.5135	0.741	.5509	1.427
.3961	1.249	.5145	0.795	.5519	1.444
.3970	1.252	.5169	0.918	.5547	1.464
.3993	1.237	.5180	0.948	.5561	1.457
.4003	1.232	.5190	1.021	.5590	1.450
.4024	1.197	.5215	1.093	.5604	1.449
.4033	1.203	.5228	1.124		
.4054	1.178	.5236	1.177	2443276	
.4063	1.125	.5259	1.268	.4508	-1.397
.4084	1.160	.5270	1.290	.4519	1.384
.4094	1.117	.5282	1.344	.4533	1.427
		.5304	1.409	.4560	1.438
2443207		.5315	1.413	.4574	1.442
.3887	-1.090	.5327	1.422	.4588	1.432
.3914	1.174	.5349	1.413	.4623	1.403
.3926	1.225	.5361	1.413	.4637	1.382
.3940	1.233	.5372	1.418	.4651	1.372
.3964	1.328	.5394	1.409	.4672	1.378
.3978	1.375	.5408	1.387	.4685	1.378
.3988	1.399	.5419	1.379	.4731	1.286
.4019	1.388	.5451	1.340	.4741	1.291
.4031	1.392	.5464	1.352	.4755	1.242
.4042	1.391	.5476	1.285	.4783	1.230
.4070	1.383			.4793	1.194

J.D.	ΔB
2443288	
.5114	-0.773
.5121	0.824
.5132	0.859
.5149	0.933
.5158	0.979
.5170	1.050
.5193	1.143
.5201	1.175
.5211	1.219
.5234	1.335
.5344	1.363
.5256	1.366
.5278	1.405
.5285	1.422
.5295	1.438
.5317	1.434
.5327	1.448
.5338	1.440
.5360	1.449
.5371	1.447
.5381	1.437
.5403	1.406
.5413	1.391
.5424	1.377
.5443	1.356
.5454	1.350
2443298	
.3454	-1.457
.3460	1.465
.3469	1.492
.3486	1.481
.3496	1.490
.3504	1.461
.3520	1.438
.3531	1.423
.3539	1.416
.3560	1.386
.3569	1.390
.3580	1.380
.3600	1.299
.3611	1.284
.3621	1.262
.3641	1.257
.3650	1.247
.3663	1.223
2443302	
.4743	-0.773
.4750	0.801
.4760	0.891
.4781	0.976

J.D.	ΔB
2443302	
.4790	-1.009
.4799	1.030
.4819	1.126
.4826	1.077
.4835	1.204
.4853	1.214
.4862	1.239
.4871	1.321
.4887	1.374
.4895	1.406
.4904	1.431
.4922	1.454
.4930	1.477
.4939	1.513
.4959	1.505
.4971	1.497
.4979	1.463
.4997	1.431
.5009	1.418
2443304	
.3515	-0.284
.3526	0.318
.3550	0.474
.3561	0.552
.3573	0.665
.3598	0.810
.3609	0.810
.3633	0.896
.3641	0.949
.3664	1.073
.3673	1.128
.3694	1.135
.3702	1.157
.3727	1.255
.3737	1.308
.3760	1.378
.3772	1.447
.3782	1.475
.3813	1.454
.3824	1.437
.3848	1.467
.3859	1.490
.3868	1.494
.3892	1.471
.3903	1.420
.3914	1.397
2443308	
.4810	+0.112
.4820	0.056
.4843	+0.012

J.D.	ΔB
2443308	
.4856	-0.014
.4881	0.033
.4892	0.041
.4902	0.053
.4929	0.100
.4943	0.146
.4952	0.165
.4978	0.219
.4991	0.264
.5001	0.311
.5027	0.403
.5040	0.442
.5049	0.497
.5076	0.635
.5089	0.668
.5100	0.690
.5127	0.677
.5138	0.886
.5150	0.965
.5181	1.052
.5192	1.114
.5202	1.171
.5225	1.275
.5237	1.289
.5247	1.304
.5270	1.353
.5284	1.408
.5295	1.426
.5321	1.528
.5333	1.480
.5343	1.474
.5366	1.408
.5376	1.391
.5385	1.389
.5410	1.372
2443580	
.5450	-0.334
.5456	0.389
.5473	0.425
.5480	0.475
.5498	0.517
.5505	0.519
.5524	0.581
.5532	0.576
.5539	0.614
.5555	0.706
.5562	0.762
.5579	0.823
.5587	0.843
.5605	0.921
.5636	0.983

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2443580		2443596		2443597	
.5643	-0.999	.4097	-0.932	.5628	-1.384
.5661	1.047	.4108	1.017	.5642	1.375
.5672	1.106	.4141	1.081	.5656	1.365
.5695	1.217	.4155	1.120	.5677	1.340
.5734	1.261	.4183	1.167	.5697	1.338
.5757	1.247	.4196	1.191	.5711	1.308
.5767	1.279	.4231	1.244	.5734	1.271
.5785	1.351	.4276	1.316	.5745	1.285
.5798	1.332	.4287	1.328		
.5820	1.341	.4341	1.350	2443599	
.5828	1.325	.4391	1.274	.3864	+0.030
.5860	1.337	.4419	1.272	.3877	0.040
.5885	1.292	.4457	1.254	.3930	+0.043
.5895	1.294	.4469	1.254	.3954	-0.030
.5922	1.334	.4490	1.210	.3967	0.002
.5936	1.297			.4003	0.049
.5959	1.294	2443597		.4013	0.090
.5970	1.297	.5045	-0.006	.4036	0.171
.5991	1.320	.5056	0.045	.4048	0.216
.6001	1.319	.5081	0.024	.4059	0.229
.6031	1.278	.5094	0.032	.4083	0.268
		.5106	0.079	.4094	0.321
2443583		.5132	0.147	.4112	0.325
.5373	+0.110	.5145	0.124	.4142	0.477
.5396	0.088	.5160	0.178	.4151	0.479
.5452	0.089	.5184	0.221	.4164	0.513
.5466	0.104	.5196	0.227	.4189	0.654
.5503	0.035	.5207	0.257	.4203	0.735
.5518	+0.018	.5229	0.310	.4213	0.778
.5580	-0.076	.5245	0.360	.4237	0.859
.5716	0.543	.5260	0.394	.4263	0.927
.5727	0.623	.5285	0.486	.4299	1.063
.5738	0.672	.5299	0.586	.4308	1.056
.5761	0.722	.5312	0.610	.4331	1.128
.5771	0.763	.5340	0.647	.4343	1.146
.5782	0.811	.5351	0.726	.4353	1.211
.5805	0.889	.5365	0.758	.4377	1.245
.5816	0.889	.5389	0.843	.4387	1.270
.5827	0.927	.5404	0.889	.4396	1.279
.5851	1.034	.5413	0.939	.4418	1.332
.5864	1.190	.5437	0.998	.4430	1.352
.5898	1.220	.5449	1.050	.4441	1.344
.5910	1.285	.5462	1.078	.4468	1.362
.5931	1.288	.5484	1.138	.4491	1.347
.5966	1.317	.5497	1.192	.4512	1.330
.6000	1.267	.5512	1.253	.4524	1.320
.6012	1.291	.5532	1.281	.4535	1.357
		.5544	1.325	.4556	1.304
2443596		.5558	1.346	.4566	1.316
.4025	-0.653	.5581	1.380	.4578	1.311
.4052	0.785	.5590	1.382	.4616	1.242
.4068	0.799	.5602	1.393	.4644	1.225

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2443599		2443645		2443716	
.4653	-1.227	.4984	-1.290	.4185	-1.196
		.5010	1.268	.4197	1.236
2443608		.5024	1.280	.4229	1.241
.4575	-0.141	.5053	1.271	.4242	1.298
.4598	0.185	.5067	1.235	.4270	1.314
.4609	0.198	.5099	1.181	.4284	1.317
.4633	0.214	.5113	1.154	.4298	1.327
.4644	0.238	.5139	1.154		
.4668	0.367			2443727	
.4680	0.404	2443659		.3388	-0.148
.4712	0.519	.4200	-0.541	.3413	0.177
.4722	0.538	.4213	0.567	.3426	0.260
.4756	0.676	.4232	0.650	.3455	0.465
.4766	0.705	.4242	0.727	.3469	0.471
.4791	0.809	.4261	0.723	.3500	0.647
.4803	0.836	.4282	0.874	.3517	0.732
.4825	0.925	.4300	0.890	.3565	0.954
.4836	0.955	.4308	0.949	.3606	1.220
.4860	1.051	.4325	1.008	.3646	1.230
.4874	1.074	.4336	1.013	.3690	1.279
.4898	1.115	.4357	1.089	.3703	1.283
.4908	1.153	.4367	1.164	.3729	1.315
.4932	1.194	.4386	1.186	.3745	1.366
.4945	1.218	.4402	1.222	.3819	1.331
.4969	1.221	.4435	1.322	.3833	1.301
.4981	1.265	.4456	1.373	.3875	1.227
.5003	1.284	.4467	1.359		
.5013	1.297	.4489	1.387	2443730	
.5036	1.303	.4495	1.420	.3457	-0.025
.5077	1.279			.3489	0.004
.5105	1.312	2443716		.3500	0.012
.5115	1.314	.3676	+0.176	.3527	0.069
.5143	1.318	.3690	0.148	.3539	0.098
.5152	1.303	.3742	0.107	.3565	0.189
		.3756	0.135	.3609	0.236
2443645		.3801	0.117	.3627	0.365
.4684	-1.086	.3831	0.095	.3652	0.510
.4696	1.092	.3867	0.061	.3666	0.531
.4731	1.199	.3898	+0.032	.3683	0.688
.4742	1.254	.3912	-0.028	.3697	0.732
.4765	1.302	.3940	0.103	.3707	0.705
.4776	1.313	.3957	0.188	.3729	0.896
.4802	1.340	.3985	0.214	.3742	0.941
.4814	1.357	.3995	0.253	.3756	1.013
.4843	1.333	.4037	0.442	.3780	1.165
.4859	1.365	.4055	0.531	.3791	1.216
.4883	1.352	.4085	0.675	.3803	1.243
.4897	1.353	.4100	0.878	.3829	1.303
.4928	1.355	.4111	0.885	.3839	1.285
.4942	1.359	.4139	1.028	.3854	1.341
.4975	1.323	.4155	1.096	.3881	1.336

J.D.	ΔB
2443730	
.3893	-1.383
.3905	1.408
.3930	1.418
.3941	1.379
.3952	1.372
.3978	1.378
.3991	1.361
2443744	
.3214	-0.141
.3228	0.141
.3256	0.269
.3270	0.280
.3297	0.602
.3308	0.708
.3322	0.772
.3363	0.847
.3398	0.897
.3412	0.922
.3450	0.934
.3464	1.006
.3478	1.022
.3505	1.134
.3518	1.287
.3544	1.360
.3572	1.414
.3603	1.405
.3618	1.357
.3631	1.348
2443931	
.4391	+0.063
.4405	0.114
.4520	+0.062
.4547	-0.019
.4561	+0.018
.4595	-0.008
.4606	0.055
.4641	0.056
.4655	0.066
.4686	0.105
.4702	0.181
.4734	0.245
.4745	0.299
.4759	0.356
.4787	0.362
.4801	0.403
.4815	0.478
.4844	0.601
.4863	0.622
.4877	0.690
.4905	0.798

J.D.	ΔB
2443931	
.4912	-0.872
.4926	0.908
.4954	1.001
.4978	1.086
.5008	1.234
.5025	1.262
.5040	1.290
.5072	1.341
.5086	1.348
.5098	1.353
.5134	1.404
.5148	1.409
.5158	1.373
.5186	1.361
.5201	1.327
.5214	1.327
2443935	
.5881	+0.074
.5893	0.065
.5914	0.088
.5926	0.117
.5959	0.061
.5967	0.068
.5989	0.105
.6002	0.106
.6020	0.098
.6031	0.072
.6045	0.113
.6061	0.063
.6079	0.073
.6091	0.024
.6110	0.059
.6119	0.051
.6137	0.043
.6144	0.039
.6162	+0.018
.6173	-0.003
.6220	0.106
.6231	0.136
.6249	0.111
.6261	0.174
.6280	0.199
.6290	0.185
.6309	0.214
.6318	0.230
.6336	0.355
.6344	0.366
.6364	0.445
.6374	0.439
.6390	0.486
.6400	0.539

J.D.	ΔB
2443935	
.6421	-0.592
.6432	0.639
.6451	0.703
.6460	0.712
.6477	0.731
.6489	0.784
.6509	0.838
.6519	0.827
.6536	0.892
.6544	0.893
.6562	0.945
.6569	0.949
.6584	0.958
.6591	0.961
.6607	0.991
.6616	1.009
.6631	1.009
.6640	1.014
.6655	1.018
.6665	0.994
.6716	0.955
.6731	0.950
.6738	0.913
2443954	
.4973	-0.567
.4991	0.568
.5039	0.744
.5053	0.787
.5067	0.866
.5095	0.979
.5106	1.013
.5118	1.048
.5146	1.125
.5157	1.164
.5173	1.187
.5199	1.268
.5214	1.289
.5227	1.300
.5256	1.340
.5271	1.353
.5282	1.373
.5309	1.367
.5324	1.370
.5337	1.352
.5360	1.325
.5382	1.297
.5435	1.265
2443957	
.4774	+0.046
.4783	-0.004

J.D.	ΔB	J.D.	ΔB	J.D.	ΔB
2443957		2443957		2443967	
.4820	+0.050	.5280	-0.954	.3363	-0.901
.4864	0.026	.5293	0.962	.3374	1.035
.4876	+0.005	.5305	0.981	.3402	1.149
.4915	-0.057	.5333	1.110	.3413	1.134
.4938	0.044	.5344	1.122	.3437	1.170
.4949	0.038	.5354	1.181	.3447	1.189
.4989	0.125	.5382	1.248	.3460	1.206
.5001	0.222	.5396	1.265	.3485	1.239
.5015	0.210	.5409	1.298	.3496	1.264
.5037	0.276	.5437	1.343	.3509	1.335
.5048	0.257	.5451	1.386	.3529	1.350
.5070	0.314	.5469	1.405	.3540	1.343
.5083	0.346	.5499	1.371	.3564	1.351
.5109	0.395	.5514	1.380	.3576	1.384
.5119	0.429			.3585	1.388
.5148	0.546	2443967		.3606	1.401
.5161	0.554	.3254	-0.478	.3615	1.377
.5185	0.613	.3266	0.498	.3627	1.361
.5199	0.697	.3309	0.487	.3649	1.335
.5209	0.739	.3323	0.634	.3659	1.315
.5244	0.845	.3336	0.672	.3805	0.703
.5254	0.803			.3814	0.731