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Multicolour photometry of the eclipsing binaries AQ Tuc and AY Vel

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Abstract. First multicolour photoelectric light curves of the eclipsing binaries AQ Tuc and AY Vel obtained in 1965 and 1969 at the Leiden Southern Station using Walraven $VBLU$ filters are presented.

Key words: eclipsing binaries - photometry

1. Program

In 1965-78 the first author (CJvH) initiated a program for obtaining multicolour photoelectric light curves of observationally neglected southern eclipsing binaries. The $VBLUW$ photoelectric observations were taken using the Walraven five-colour photometer (Walraven & Walraven, 1960) attached to the 0.9 m light collector of the Leiden Southern Station near Hartebeespoortdam, South Africa. The effective wavelengths and band-widths of Walraven filters are as follows: W (327 nm, 15 nm), U (367 nm, 26 nm), L (390 nm, 29 nm), B (429.5 nm, 42 nm), V (545 nm, 85 nm). Transformation of the V colour and the $(B-V)$ colour index from the Walraven to the Johnson system and normalization of the Walraven colour indices are described in Horák et al. (1999).

2. Observations

We present four-band Walraven $VBLU$ observations of the eclipsing binaries AQ Tuc (HD 1372) and AY Vel (HD 70448) as a part of the program mentioned above. Our observations of AQ Tuc and AY Vel were taken in 1965 and 1969, respectively. The journal of observations is given in Table 1. The phases of AQ Tuc and AY Vel were calculated using the ephemerides:

$$\text{Min I} = \text{HJD}\ \underset{\pm 9}{2\,438257.231}\ + \underset{\pm 13}{0.5948421}\ \times E, \tag{1}$$

$$\text{Min I} = \text{HJD}\ \underset{\pm 2}{2\,415\,842.66}\ + \underset{\pm 5}{1.617640}\ \times E + \underset{\pm 30}{1.89}\ 10^{-9} \times E^2, \tag{2}$$

derived in Chochol et al. (2001).

Table 1. Journal of photometric observations of AQ Tuc and AY Vel

Date		HJD_{mean} 2 400 000+	Phases	Date		HJD_{mean} 2 400 000+	Phases
1965		**AQ Tuc**		Feb	23	40276.4289	0.2544 - 0.3677
Sep	13	39017.3460	0.6897 - 0.9970	Feb	25	40278.3683	0.4658 - 0.5541
Sep	14	39018.3885	0.3943 - 0.7976	Mar	4	40285.3760	0.7953 - 0.8884
Sep	15	39019.3818	0.2491 - 0.2826	Mar	18	40299.2742	0.4111 - 0.4553
Sep	19	39023.4364	0.9334 - 0.2306	Mar	22	40303.3371	0.8883 - 0.0011
Sep	21	39025.4160	0.3203 - 0.4997	Mar	23	40304.3311	0.4994 - 0.6189
Sep	28	39032.4318	0.0293 - 0.3793	Mar	24	40305.3620	0.1575 - 0.2354
1969		**AY Vel**		Apr	8	40320.2680	0.3863 - 0.4352
Feb	6	40259.3583	0.7241 - 0.7933	Apr	10	40322.2882	0.6248 - 0.6944
Feb	13	40266.3859	0.0225 - 0.1832	Apr	21	40333.2902	0.4142 - 0.5070

The magnitudes and colour indices of the comparison stars in Johnson and normalized Walraven system are given in Table 2.

Table 2. The comparison stars used and their magnitudes in Johnson (subscript J) and normalized Walraven system (subscript W)

star	comparison	V_{J}	$(B-V)_{\text{J}}$	$(L-B)_{\text{W}}$	$(U-B)_{\text{W}}$	$(W-U)_{\text{W}}$
AQ Tuc	HD1175	9.90	0.404	0.500	0.638	—
AY Vel	HD70250	8.99	0.090	0.459	1.086	0.261

Individual differential $VBLU$ magnitudes of AY Vel and AQ Tuc with respect to the comparison stars are given in Table 3 and Table 4, respectively.

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Table 3. Individual differential $VBLU$ magnitudes of AQ Tuc with respect to the comparison star. Heliocentric julian dates are JD = JD* + 2 439 000

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
17.2546	0.063	0.024	0.091	0.224	17.2721	0.011	-0.003	0.078	0.172
17.2619	0.050	0.027	0.090	0.231	17.2761	0.022	-0.023	0.057	0.158
17.2662	0.016	-0.020	0.015	0.155	17.2813	0.008	-0.022	-0.015	0.145

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Table 3. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
17.2852	0.009	-0.008	0.064	0.202	18.3414	0.546	0.495	0.546	0.681
17.2906	0.017	-0.032	-0.002	0.137	18.3467	0.539	0.516	0.579	0.664
17.2949	0.038	0.028	0.092	0.242	18.3504	0.521	0.481	0.593	0.748
17.2969	0.015	-0.010	0.013	0.174	18.3552	0.489	0.449	0.515	0.646
17.3026	0.043	0.034	0.083	0.279	18.3584	0.423	0.405	0.464	0.631
17.3054	0.032	-0.023	-0.003	0.215	18.3627	0.423	0.399	0.481	0.559
17.3089	0.028	-0.021	0.031	0.212	18.3663	0.379	0.358	0.430	0.573
17.3136	0.025	-0.011	0.060	0.261	18.3706	0.366	0.323	0.402	0.486
17.3171	0.048	0.008	0.057	0.220	18.3744	0.335	0.305	0.359	0.500
17.3216	0.056	0.011	0.079	0.261	18.3796	0.286	0.277	0.340	0.442
17.3250	0.052	-0.006	0.020	0.188	18.3834	0.262	0.255	0.316	0.500
17.3297	0.065	0.008	0.041	0.203	18.3883	0.241	0.223	0.325	0.394
17.3330	0.065	0.002	0.042	0.176	18.3920	0.215	0.203	0.288	0.405
17.3377	0.088	0.025	0.062	0.268	18.3972	0.198	0.181	0.235	0.370
17.3415	0.107	0.070	0.105	0.270	18.4008	0.196	0.161	0.224	0.352
17.3462	0.098	0.061	0.140	0.305	18.4051	0.162	0.122	0.201	0.352
17.3496	0.109	0.090	0.197	0.343	18.4085	0.168	0.142	0.181	0.339
17.3649	0.147	0.112	0.185	0.340	18.4129	0.144	0.114	0.224	0.346
17.3686	0.177	0.137	0.191	0.352	18.4163	0.129	0.104	0.168	0.267
17.3731	0.207	0.157	0.215	0.356	18.4214	0.110	0.085	0.146	0.265
17.3768	0.205	0.158	0.175	0.321	18.4247	0.101	0.069	0.153	0.264
17.3820	0.235	0.203	0.278	0.366	18.4293	0.077	0.065	0.135	0.259
17.3856	0.237	0.203	0.293	0.378	18.4324	0.086	0.046	0.128	0.232
17.3908	0.271	0.265	0.315	0.461	18.4374	0.103	0.047	0.118	0.198
17.3942	0.324	0.265	0.311	0.443	18.4413	0.069	0.026	0.052	0.188
17.3988	0.374	0.314	0.408	0.496	18.4444	0.070	0.020	0.085	0.207
17.4023	0.392	0.363	0.391	0.540	18.4490	0.071	0.028	0.083	0.205
17.4069	0.423	0.407	0.447	0.560	18.4550	0.047	0.021	0.079	0.177
17.4105	0.458	0.427	0.504	0.615	18.4583	0.045	0.011	0.026	0.176
17.4157	0.487	0.438	0.543	0.670	18.4631	0.016	-0.003	0.044	0.225
17.4193	0.509	0.448	0.493	0.644	18.4666	0.015	-0.020	0.022	0.147
17.4258	0.540	0.495	0.520	0.639	18.4717	0.008	-0.008	-0.006	0.154
17.4295	0.533	0.476	0.536	0.655	18.4754	0.007	-0.016	0.012	0.168
17.4342	0.565	0.501	0.565	0.700	18.4804	0.012	-0.027	0.031	0.174
17.4374	0.559	0.517	0.575	0.691	18.4839	0.025	-0.031	0.021	0.196
18.2686	0.250	0.222	0.308	0.475	18.4888	0.011	-0.022	0.025	0.240
18.2729	0.264	0.220	0.305	0.408	18.4922	0.014	-0.037	0.025	0.173
18.2818	0.322	0.298	0.385	0.517	18.4970	0.026	-0.018	0.032	0.172
18.2859	0.338	0.309	0.368	0.505	18.5001	0.029	-0.028	0.029	0.196
18.2898	0.396	0.359	0.394	0.490	18.5052	0.041	-0.026	0.055	0.198
18.2944	0.427	0.391	0.456	0.545	18.5085	0.039	0.003	0.058	0.231
18.2979	0.426	0.379	0.423	0.554	19.3719	0.023	-0.017	0.065	0.174
18.3020	0.436	0.412	0.433	0.515	19.3754	0.002	-0.026	0.013	0.144
18.3057	0.472				19.3801	0.015	-0.015	0.022	0.163
18.3103	0.504	0.458	0.524	0.664	19.3882	0.038	-0.013	0.020	0.182
18.3133	0.519	0.469	0.517	0.647	19.3918	0.028	0.003	0.040	0.193
18.3195	0.534	0.515	0.582	0.714	23.3480	0.365	0.324	0.363	0.490
18.3232	0.529	0.494	0.555	0.714	23.3531	0.445	0.392	0.464	0.598
18.3277	0.518	0.481	0.554	0.656	23.3552	0.448	0.387	0.469	0.570
18.3311	0.519	0.491	0.540	0.646	23.3598	0.466	0.400	0.472	0.578
18.3359	0.527	0.490	0.510	0.694	23.3631	0.488	0.462	0.518	0.644

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Table 3. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
23.3678	0.546	0.536	0.575	0.730	25.4662	0.512	0.480	0.571	0.692
23.3717	0.498	0.476	0.498	0.656	25.4694	0.526	0.474	0.536	0.672
23.3770	0.522	0.467	0.539	0.610	32.3277	0.510	0.467	0.542	0.685
23.3803	0.560	0.506	0.492	0.607	32.3325	0.463	0.394	0.461	0.619
23.3974	0.547	0.470	0.542	0.679	32.3370	0.447	0.414	0.510	0.621
23.4021	0.522	0.459	0.502	0.707	32.3402	0.406	0.370	0.396	0.541
23.4054	0.487	0.426	0.462	0.598	32.3448	0.333	0.313	0.341	0.504
23.4104	0.485	0.441	0.458	0.621	32.3483	0.322	0.287	0.316	0.451
23.4140	0.432	0.389	0.404	0.577	32.3530	0.287	0.266	0.312	0.456
23.4188	0.393	0.369	0.400	0.562	32.3562	0.296	0.259	0.341	0.489
23.4219	0.387	0.339	0.391	0.591	32.3607	0.244	0.215	0.259	0.422
23.4265	0.351	0.314	0.379	0.528	32.3639	0.219	0.209	0.194	0.362
23.4295	0.288	0.263	0.315	0.469	32.3682	0.212	0.171	0.199	0.338
23.4342	0.287	0.227	0.331	0.395	32.3716	0.192	0.140	0.192	0.336
23.4377	0.277	0.265	0.318	0.368	32.3758	0.193	0.128	0.147	0.305
23.4427	0.207	0.192	0.240	0.350	32.3792	0.151	0.100	0.156	0.278
23.4463	0.209	0.165	0.228	0.376	32.3839	0.126	0.094	0.131	0.252
23.4575	0.150	0.106	0.148	0.270	32.3873	0.140	0.088	0.139	0.326
23.4608	0.128	0.062	0.130	0.270	32.3921	0.115	0.081	0.120	0.276
23.4652	0.114	0.068	0.139	0.288	32.3957	0.084	0.059	0.105	0.222
23.4685	0.094	0.063	0.114	0.296	32.4002	0.097	0.065	0.104	0.248
23.4728	0.094	0.059	0.100	0.297	32.4199	0.039	0.024	0.075	0.202
23.4759	0.082	0.057	0.112	0.246	32.4252	0.020	0.006	0.066	0.210
23.4843	0.049	0.025	0.038	0.222	32.4284	0.002	-0.005	0.034	0.184
23.4878	0.065	0.026	0.092	0.249	32.4331	0.022	-0.007	0.045	0.210
23.4926	0.054	0.004	0.068	0.177	32.4362	0.010	-0.031	0.047	0.163
23.4962	0.030	-0.023	0.029	0.197	32.4409	0.019	-0.025	0.026	0.210
23.5114	0.030	-0.003	0.063	0.188	32.4441	0.032	-0.018	0.047	0.175
23.5159	0.022	-0.032	0.039	0.175	32.4518	0.023	-0.015	0.041	0.177
23.5193	0.017	-0.008	0.035	0.179	32.4554	0.028	-0.005	0.058	0.185
23.5248	0.021	0.003	0.065	0.162	32.4602	0.017	-0.014	0.037	0.186
25.3627	0.080	0.049	0.105	0.281	32.4636	0.012	-0.024	0.030	0.181
25.3666	0.089	0.031	0.179	0.255	32.4682	0.010	-0.012	0.058	0.183
25.3709	0.138	0.083	0.173	0.306	32.4717	0.056	0.001	0.064	0.200
25.3742			0.170	0.305	32.4763	0.054	0.007	0.084	0.196
25.3962	0.193	0.186	0.230	0.373	32.4793	0.063	0.016	0.075	0.202
25.3998	0.232	0.220	0.205	0.398	32.4839	0.060	0.039	0.076	0.228
25.4046	0.250	0.209	0.283	0.439	32.4872	0.073	0.016	0.091	0.217
25.4078	0.266	0.219	0.266	0.403	32.4912	0.063	0.019	0.092	0.227
25.4125	0.279	0.246	0.327	0.476	32.4946	0.096	0.034	0.117	0.197
25.4160	0.311	0.260	0.342	0.541	32.4989	0.105	0.065	0.130	0.205
25.4207	0.341	0.304	0.344	0.555	32.5022	0.103	0.065	0.112	0.278
25.4242	0.361	0.312	0.368	0.500	32.5066	0.115	0.087	0.121	0.260
25.4292	0.400	0.355	0.410	0.560	32.5098	0.117	0.086	0.136	0.288
25.4360	0.426	0.404	0.443	0.590	32.5141	0.128	0.097	0.163	0.283
25.4422	0.470	0.438	0.531	0.653	32.5206	0.142	0.120	0.201	0.364
25.4455	0.493	0.463	0.523	0.650	32.5251	0.146	0.107	0.186	0.318
25.4502	0.504	0.494	0.555	0.639	32.5286	0.175	0.164	0.185	0.340
25.4535	0.536	0.496	0.544	0.677	32.5329	0.206	0.185	0.253	0.353
25.4580	0.534	0.470	0.565	0.655	32.5359	0.208	0.190	0.209	0.401
25.4612	0.538	0.494	0.563	0.699					

Table 4. Individual differential $VBLU$ magnitudes of AY Vel with respect to the comparison star. Heliocentric julian dates are JD = JD* + 2 440 000

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
259.3024	0.415	0.539	0.367	0.234	266.3084	0.740	0.884	0.753	0.604
259.3073	0.436	0.568	0.402	0.256	266.3101	0.749	0.888	0.733	0.646
259.3105	0.407	0.560	0.379	0.229	266.3136	0.721	0.876	0.720	0.630
259.3142	0.396	0.569	0.380	0.232	266.3153	0.712	0.882	0.727	0.598
259.3160	0.409	0.561	0.395	0.216	266.3179	0.715	0.872	0.706	0.608
259.3188	0.413	0.556	0.375	0.219	266.3195	0.702	0.864	0.702	0.630
259.3209	0.422	0.547	0.391	0.209	266.3223	0.712	0.862	0.663	0.600
259.3236	0.421	0.550	0.388	0.231	266.3238	0.709	0.852	0.677	0.576
259.3252	0.419	0.571	0.380	0.261	266.3267	0.686	0.846	0.696	0.570
259.3278	0.408	0.562	0.375	0.249	266.3283	0.710	0.850	0.666	0.575
259.3294	0.415	0.560	0.383	0.216	266.3312	0.707	0.825	0.664	0.604
259.3321	0.421	0.566	0.376	0.226	266.3329	0.690	0.824	0.666	0.546
259.3337	0.411	0.561	0.380	0.257	266.3355	0.659	0.814	0.655	0.545
259.3364	0.423	0.564	0.407	0.228	266.3370	0.672	0.818	0.637	0.558
259.3382	0.407	0.550	0.380	0.221	266.3399	0.663	0.801	0.635	0.564
259.3408	0.387	0.548	0.395	0.253	266.3414	0.669	0.809	0.623	0.582
259.3424	0.395	0.546	0.370	0.258	266.3443	0.668	0.814	0.646	0.565
259.3451	0.412	0.554	0.382	0.242	266.3459	0.641	0.771	0.606	0.509
259.3468	0.403	0.548	0.384	0.264	266.3487	0.616	0.784	0.604	0.530
259.3494	0.395	0.550	0.380	0.242	266.3506	0.609	0.759	0.568	0.507
259.3510	0.397	0.560	0.374	0.234	266.3619	0.598	0.751	0.584	0.449
259.3534	0.401	0.546	0.357	0.211	266.3635	0.595	0.740	0.570	0.461
259.3552	0.394	0.528	0.335	0.204	266.3660	0.600	0.756	0.596	0.496
259.3591	0.403	0.546	0.371	0.235	266.3675	0.617	0.743	0.584	0.483
259.3608	0.416	0.542	0.369	0.268	266.3699	0.606	0.750	0.566	0.495
259.3981	0.424	0.558	0.385	0.245	266.3723	0.591	0.748	0.582	0.474
259.4011	0.426	0.563	0.384	0.280	266.3750	0.596	0.742	0.542	0.469
259.4028	0.423	0.557	0.388	0.281	266.3766	0.602	0.748	0.562	0.452
259.4052	0.426	0.566	0.400	0.263	266.3945	0.569	0.708	0.534	0.444
259.4070	0.428	0.562	0.380	0.270	266.3959	0.579	0.730	0.526	0.430
259.4096	0.419	0.570	0.397	0.273	266.3984	0.550	0.703	0.534	0.450
259.4113	0.454	0.593	0.398	0.302	266.3999	0.535	0.695	0.527	0.411
259.4143	0.417	0.557	0.391	0.242	266.4025	0.536	0.698	0.516	0.427
266.2560	0.850	1.024	0.866	0.797	266.4045	0.552	0.701	0.518	0.421
266.2576	0.863	1.018	0.874	0.804	266.4072	0.542	0.693	0.524	0.444
266.2629	0.857	1.016	0.869	0.753	266.4088	0.546	0.688	0.523	0.430
266.2646	0.856	0.994	0.845	0.768	266.4112	0.539	0.694	0.518	0.408
266.2693	0.846	0.997	0.840	0.775	266.4128	0.535	0.692	0.506	0.408
266.2709	0.832	0.973	0.813	0.778	266.4152	0.528	0.692	0.501	0.360
266.2862	0.809	0.954	0.792	0.696	266.4168	0.529	0.673	0.497	0.390
266.2876	0.792	0.944	0.788	0.694	266.4193	0.541	0.688	0.497	0.392
266.2904	0.780	0.941	0.770	0.677	266.4209	0.526	0.675	0.513	0.383
266.2919	0.789	0.937	0.777	0.699	266.4231	0.540	0.684	0.519	0.399
266.2946	0.782	0.932	0.762	0.686	266.4254	0.517	0.668	0.506	0.397
266.2962	0.768	0.920	0.737	0.675	266.4280	0.514	0.672	0.503	0.385
266.2992	0.784	0.926	0.740	0.670	266.4294	0.513	0.670	0.508	0.396
266.3008	0.776	0.912	0.742	0.637	266.4318	0.501	0.662	0.485	0.378
266.3039	0.753	0.918	0.721	0.652	266.4335	0.506	0.666	0.509	0.385
266.3055	0.754	0.900	0.742	0.655	266.4360	0.498	0.667	0.468	0.347

SUPPLEMENT

Table 4. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
266.4377	0.516	0.659	0.473	0.305	276.3814	0.391	0.554	0.372	0.257
266.4404	0.513	0.661	0.494	0.330	276.3834	0.420	0.563	0.383	0.278
266.4420	0.488	0.650	0.479	0.336	276.3876	0.422	0.565	0.380	0.290
266.4447	0.498	0.654	0.490	0.343	276.3891	0.437	0.575	0.414	0.287
266.4464	0.495	0.646	0.472	0.374	276.3920	0.441	0.565	0.383	0.257
266.4491	0.499	0.652	0.490	0.379	276.4151	0.430	0.529	0.362	0.269
266.4535	0.498	0.640	0.471	0.360	276.4167	0.413	0.550	0.377	0.264
266.4552	0.504	0.663	0.485	0.365	276.4193	0.422	0.580	0.394	0.304
266.4578	0.481	0.623	0.449	0.342	276.4209	0.429	0.575	0.402	0.293
266.4594	0.479	0.630	0.439	0.361	276.4234	0.444	0.582	0.405	0.278
266.4619	0.480	0.611	0.444	0.358	276.4251	0.434	0.583	0.414	0.282
266.4634	0.483	0.636	0.466	0.332	276.4293	0.435	0.583	0.404	0.293
266.4663	0.483	0.626	0.449	0.330	276.4322	0.456	0.585	0.406	0.278
266.4679	0.482	0.633	0.472	0.362	276.4350	0.445	0.590	0.433	0.303
266.4705	0.482	0.630	0.457	0.341	276.4365	0.452	0.584	0.436	0.281
266.4721	0.491	0.632	0.474	0.382	276.4393	0.459	0.595	0.433	0.257
266.4748	0.488	0.641	0.460	0.335	276.4420	0.419	0.583	0.406	0.276
266.4767	0.484	0.634	0.445	0.366	276.4447	0.417	0.569	0.400	0.254
266.4809	0.485	0.652	0.468	0.350	276.4465	0.446	0.593	0.430	0.263
266.4824	0.481	0.635	0.467	0.346	276.4492	0.432	0.586	0.412	0.281
266.4852	0.454	0.602	0.418	0.316	276.4507	0.452	0.595	0.406	0.292
266.4868	0.465	0.589	0.420	0.314	276.4539	0.462	0.608	0.438	0.312
266.4895	0.485	0.637	0.452	0.345	276.4624	0.450	0.595	0.411	0.287
266.4912	0.488	0.631	0.451	0.305	276.4639	0.467	0.624	0.433	0.334
266.4938	0.483	0.616	0.427	0.303	276.4667	0.471	0.587	0.408	0.314
266.4952	0.490	0.623	0.455	0.348	276.4685	0.472	0.614	0.436	0.324
266.5022	0.471	0.617	0.423	0.324	276.4731	0.480	0.599	0.439	0.289
266.5038	0.469	0.618	0.437	0.347	276.4746	0.470	0.622	0.439	0.295
266.5064	0.473	0.615	0.435	0.323	276.4774	0.462	0.592	0.446	0.294
266.5080	0.475	0.636	0.454	0.330	276.4790	0.466	0.610	0.442	0.316
266.5106	0.434	0.603	0.437	0.287	276.4818	0.466	0.620	0.438	0.337
266.5121	0.443	0.592	0.426	0.273	276.4834	0.474	0.614	0.433	0.325
266.5145	0.457	0.600	0.405	0.273	276.4859	0.492	0.634	0.463	0.365
266.5159	0.437	0.600	0.428	0.303	276.4878	0.489	0.630	0.456	0.335
276.3372	0.421	0.566	0.395	0.247	276.4905	0.478	0.623	0.435	0.321
276.3402	0.405	0.551	0.372	0.230	276.4920	0.453	0.608	0.437	0.302
276.3417	0.418	0.554	0.378	0.238	276.4948	0.471	0.619	0.433	0.332
276.3464	0.412	0.551	0.355	0.239	276.4963	0.476	0.621	0.441	0.324
276.3480	0.403	0.535	0.362	0.256	276.4989	0.489	0.623	0.465	0.342
276.3520	0.409	0.547	0.356	0.248	276.5004	0.482	0.629	0.457	0.340
276.3538	0.422	0.568	0.384	0.262	276.5029	0.491	0.644	0.445	0.334
276.3567	0.422	0.557	0.394	0.254	276.5044	0.492	0.632	0.449	0.326
276.3586	0.419	0.564	0.385	0.282	276.5069	0.506	0.626	0.448	0.298
276.3614	0.421	0.564	0.400	0.270	276.5084	0.504	0.626	0.464	0.328
276.3630	0.427	0.563	0.401	0.258	276.5106	0.495	0.638	0.491	0.321
276.3656	0.425	0.565	0.402	0.271	276.5121	0.497	0.640	0.460	0.336
276.3698	0.403	0.554	0.390	0.255	276.5153	0.489	0.646	0.452	0.345
276.3725	0.437	0.565	0.391	0.247	276.5168	0.482	0.650	0.446	0.357
276.3743	0.420	0.549	0.393	0.264	276.5191	0.493	0.645	0.436	0.325
276.3772	0.406	0.545	0.377	0.248	276.5206	0.515	0.656	0.444	0.331
276.3788	0.405	0.557	0.391	0.261	278.2970	0.748	0.889	0.722	0.572

Table 4. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
278.2986	0.738	0.888	0.712	0.587	278.4380	0.683	0.810	0.628	0.496
278.3013	0.728	0.860	0.689	0.568	278.4397	0.684			
278.3028	0.728	0.860	0.676	0.550	285.3007	0.419	0.560	0.401	0.243
278.3054	0.736	0.875	0.695	0.590	285.3022	0.434	0.557	0.399	0.290
278.3072	0.750	0.878	0.705	0.551	285.3050	0.431	0.584	0.394	0.278
278.3097	0.745	0.884	0.688	0.569	285.3067	0.427	0.584	0.403	0.282
278.3114	0.739	0.890	0.695	0.579	285.3095	0.439	0.582	0.398	0.275
278.3174	0.743	0.898	0.721	0.580	285.3112	0.440	0.594	0.432	0.267
278.3188	0.763	0.904	0.717	0.586	285.3142	0.458	0.593	0.433	0.315
278.3203	0.773	0.910	0.744	0.600	285.3177	0.437	0.568	0.415	0.260
278.3229	0.767	0.909	0.734	0.614	285.3198	0.454	0.574	0.390	0.279
278.3253	0.776	0.911	0.739	0.596	285.3221	0.453	0.590	0.402	0.249
278.3269	0.797	0.924	0.734	0.590	285.3246	0.425	0.587	0.395	0.271
278.3293	0.781	0.914	0.748	0.571	285.3262	0.456	0.593	0.395	0.307
278.3309	0.793	0.940	0.744	0.620	285.3289	0.427	0.580	0.394	0.301
278.3336	0.782	0.931	0.753	0.629	285.3305	0.429	0.586	0.386	0.293
278.3350	0.777	0.929	0.728	0.639	285.3331	0.459	0.588	0.411	0.310
278.3380	0.799	0.930	0.740	0.639	285.3347	0.436	0.568	0.393	0.262
278.3396	0.785	0.926	0.760	0.647	285.3373	0.468	0.595	0.417	0.279
278.3422	0.798	0.946	0.748	0.643	285.3388	0.484	0.615	0.448	0.296
278.3437	0.784	0.951	0.741	0.634	285.3415	0.450	0.573	0.414	0.261
278.3462	0.802	0.937	0.747	0.620	285.3432	0.451	0.588	0.394	0.257
278.3478	0.805	0.944	0.744	0.602	285.3457	0.458	0.617	0.447	0.286
278.3502	0.808	0.938	0.747	0.588	285.3473	0.462	0.605	0.445	0.274
278.3519	0.799	0.935	0.730	0.626	285.3499	0.437	0.593	0.399	0.220
278.3543	0.775	0.933	0.732	0.633	285.3515	0.447	0.589	0.434	0.270
278.3559	0.790	0.943	0.744	0.622	285.3541	0.467	0.614	0.434	0.283
278.3602	0.800	0.935	0.719	0.606	285.3557	0.450	0.606	0.425	0.293
278.3618	0.785	0.928	0.752	0.616	285.3597	0.449	0.603	0.420	0.247
278.3645	0.781	0.942	0.745	0.630	285.3613	0.438	0.605	0.425	0.275
278.3661	0.813	0.944	0.769	0.640	285.3642	0.447	0.609	0.421	0.246
278.3689	0.780	0.921	0.744	0.602	285.3657	0.445	0.608	0.428	0.281
278.3705	0.780	0.929	0.747	0.593	285.3677	0.469	0.616	0.446	
278.3731	0.772	0.918	0.727	0.607	285.3700	0.482	0.617	0.428	
278.3746	0.763	0.917	0.730	0.606	285.3727	0.480	0.602	0.411	0.297
278.3770	0.784	0.914	0.722	0.606	285.3742	0.471	0.609	0.427	0.293
278.3786	0.736	0.915	0.726	0.618	285.3769	0.508	0.628	0.443	0.307
278.3812	0.767	0.917	0.732	0.610	285.3785	0.478	0.616	0.452	0.327
278.3835	0.775	0.921	0.737	0.647	285.3813	0.474	0.599	0.413	0.300
278.3861	0.753	0.913	0.730	0.630	285.3829	0.474	0.603	0.432	0.284
278.3878	0.781	0.927	0.746	0.612	285.3854	0.476	0.624	0.440	0.331
278.3904	0.763	0.903	0.725	0.579	285.3870	0.478	0.649	0.433	0.329
278.3921	0.758	0.909	0.746	0.600	285.3894	0.512	0.666	0.497	0.358
278.3950	0.772	0.899	0.700	0.583	285.3914	0.488	0.662	0.494	0.329
278.3977	0.739	0.900	0.727	0.574	285.3940	0.481	0.634	0.441	0.369
278.4010	0.758	0.898	0.716	0.569	285.3969	0.487	0.618	0.435	0.358
278.4026	0.751	0.924	0.717	0.599	285.4031	0.463	0.622	0.460	0.315
278.4067	0.738	0.883	0.690	0.572	285.4046	0.488	0.639	0.456	0.340
278.4083	0.730	0.890	0.695	0.581	285.4069	0.473	0.626	0.457	0.291
278.4335	0.714	0.833	0.664	0.549	285.4086	0.493	0.648	0.456	0.303
278.4351	0.692	0.818	0.644	0.529	285.4112	0.509	0.671	0.499	0.313

SUPPLEMENT

Table 4. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
285.4127	0.507	0.658	0.486	0.332	303.2953	0.623	0.772	0.605	0.487
285.4151	0.496	0.646	0.468	0.345	303.2987	0.618	0.783	0.603	0.469
285.4166	0.504	0.648	0.475	0.346	303.3002	0.622	0.777	0.597	0.508
285.4193	0.514	0.658	0.469	0.306	303.3029	0.622	0.773	0.613	0.497
285.4210	0.506	0.643	0.482	0.308	303.3044	0.636	0.787	0.607	0.514
285.4236	0.529	0.659	0.511	0.374	303.3070	0.639	0.799	0.617	0.503
285.4251	0.498	0.652	0.505	0.369	303.3089	0.647	0.805	0.628	0.517
285.4275	0.502	0.666	0.484	0.353	303.3130	0.660	0.818	0.643	0.544
285.4291	0.507	0.665	0.481	0.330	303.3146	0.656	0.811	0.662	0.535
285.4315	0.508	0.662	0.504	0.396	303.3172	0.674	0.822	0.659	0.549
285.4334	0.506	0.668	0.492	0.345	303.3189	0.679	0.839	0.670	0.555
285.4353	0.518	0.661	0.452	0.355	303.3215	0.662	0.828	0.668	0.546
285.4369	0.529	0.662	0.474	0.351	303.3230	0.692	0.841	0.663	0.553
285.4408	0.543	0.675	0.494	0.342	303.3256	0.677	0.845	0.652	0.562
285.4431	0.519	0.687	0.512	0.335	303.3273	0.705	0.856	0.690	0.564
285.4457	0.513	0.674	0.490	0.346	303.3299	0.685	0.860	0.657	0.587
285.4472	0.524	0.711	0.531	0.400	303.3315	0.713	0.865	0.690	0.559
285.4499	0.531	0.708	0.520	0.413	303.3345	0.720	0.876	0.678	0.585
285.4514	0.537	0.712	0.529	0.426	303.3381	0.720	0.874	0.686	0.591
299.2385	0.579	0.734	0.540	0.408	303.3412	0.747	0.878	0.721	0.627
299.2401	0.559	0.728	0.532	0.418	303.3427	0.734	0.892	0.739	0.630
299.2432	0.569	0.715	0.555	0.430	303.3464	0.743	0.904	0.749	0.638
299.2447	0.561	0.714	0.542	0.393	303.3494	0.758	0.910	0.750	0.645
299.2758	0.633	0.777	0.614	0.437	303.3525	0.744	0.902	0.741	0.647
299.2796	0.625	0.764	0.571	0.435	303.3557	0.757	0.932	0.750	0.671
299.2915	0.656	0.795	0.620	0.469	303.3604	0.765	0.924	0.764	0.690
299.2932	0.659	0.814	0.629	0.497	303.3626	0.793	0.951	0.774	0.704
299.2975	0.679	0.819	0.653	0.518	303.3661	0.791	0.938	0.784	0.682
299.3001	0.677	0.836	0.665	0.483	303.3683	0.783	0.948	0.782	0.690
299.3017	0.668	0.828	0.641	0.505	303.3715	0.806	0.961	0.796	0.704
299.3043	0.683	0.819	0.639	0.510	303.3749	0.809	0.965	0.797	0.716
299.3059	0.663	0.800	0.616	0.477	303.3785	0.832	0.982	0.835	0.717
299.3084	0.669	0.832	0.633	0.552	303.3810	0.826	0.989	0.830	0.726
299.3100	0.694	0.868	0.651	0.554	303.3844	0.827	0.984	0.822	0.735
303.2459	0.543	0.676	0.508	0.388	303.3866	0.829	0.977	0.820	0.747
303.2473	0.545	0.682	0.491	0.369	303.3904	0.848	0.992	0.816	0.741
303.2511	0.559	0.689	0.519	0.395	303.3927	0.846	1.005	0.833	0.759
303.2527	0.558	0.695	0.522	0.385	303.3961	0.868	1.023	0.860	0.764
303.2658	0.563	0.714	0.539	0.432	303.3983	0.861	1.008	0.850	0.769
303.2674	0.565	0.714	0.546	0.428	303.4032	0.862	1.034	0.873	0.804
303.2720	0.568	0.736	0.542	0.427	303.4054	0.884	1.040	0.887	0.820
303.2737	0.568	0.738	0.556	0.430	303.4088	0.870	1.047	0.885	0.836
303.2763	0.582	0.740	0.562	0.424	303.4111	0.863	1.030	0.878	0.803
303.2779	0.587	0.746	0.551	0.432	303.4145	0.877	1.051	0.891	0.827
303.2807	0.585	0.732	0.549	0.427	303.4168	0.892	1.073	0.907	0.823
303.2829	0.602	0.733	0.563	0.419	303.4201	0.857	1.031	0.876	0.790
303.2853	0.608	0.748	0.565	0.450	303.4230	0.889	1.048	0.885	0.827
303.2869	0.612	0.751	0.583	0.460	303.4262	0.883	1.040	0.885	0.805
303.2893	0.612	0.751	0.573	0.470	303.4284	0.887	1.036	0.872	0.818
303.2908	0.613	0.758	0.589	0.472	304.2345	0.786	0.938	0.757	0.624
303.2938	0.612	0.769	0.581	0.470	304.2366	0.776	0.920	0.741	0.625

Table 4. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
304.2400	0.780	0.935	0.752	0.636	304.3773	0.565	0.719	0.551	0.421
304.2422	0.785	0.933	0.739	0.618	304.3809	0.592	0.744	0.547	0.405
304.2450	0.784	0.929	0.738	0.621	304.3824	0.557	0.722	0.545	0.429
304.2473	0.784	0.934	0.735	0.622	304.3853	0.564	0.716	0.527	0.417
304.2501	0.791	0.928	0.726	0.622	304.3876	0.588	0.720	0.544	0.371
304.2523	0.782	0.921	0.727	0.595	304.3902	0.572	0.698	0.535	0.383
304.2569	0.773	0.926	0.738	0.599	304.3918	0.571	0.715	0.506	0.426
304.2590	0.773	0.932	0.736	0.597	304.3944	0.566	0.720	0.539	0.431
304.2622	0.783	0.925	0.730	0.613	304.3961	0.542	0.703	0.515	0.389
304.2643	0.782	0.928	0.742	0.596	304.3988	0.530	0.695	0.526	0.372
304.2673	0.767	0.910	0.729	0.591	304.4004	0.546	0.693	0.522	0.403
304.2695	0.763	0.922	0.741	0.602	304.4031	0.546	0.692	0.500	0.391
304.2725	0.758	0.904	0.726	0.595	304.4046	0.523	0.681	0.503	0.345
304.2747	0.760	0.907	0.715	0.603	304.4072	0.533	0.688	0.487	0.402
304.2778	0.752	0.898	0.724	0.593	304.4090	0.532	0.688	0.498	0.372
304.2800	0.757	0.908	0.717	0.602	304.4125	0.554	0.699	0.515	0.380
304.2829	0.758	0.900	0.702	0.591	304.4141	0.551	0.683	0.500	0.408
304.2852	0.752	0.889	0.698	0.595	304.4167	0.535	0.679	0.500	0.361
304.2887	0.745	0.890	0.702	0.589	304.4182	0.539	0.683	0.501	0.357
304.2909	0.742	0.895	0.710	0.575	304.4200	0.528	0.667	0.470	0.356
304.2972	0.725	0.874	0.687	0.540	304.4235	0.535	0.675	0.493	0.352
304.3002	0.729	0.873	0.690	0.556	304.4264	0.520	0.686	0.500	0.380
304.3053	0.726	0.866	0.682	0.542	304.4278	0.511	0.672	0.502	0.357
304.3082	0.690	0.849	0.664	0.530	305.2991	0.495	0.647	0.447	0.351
304.3113	0.692	0.850	0.666	0.536	305.3007	0.506	0.633	0.466	0.365
304.3134	0.709	0.863	0.681	0.565	305.3034	0.484	0.628	0.465	0.360
304.3165	0.696	0.848	0.670	0.557	305.3049	0.478	0.619	0.465	0.302
304.3197	0.682	0.831	0.663	0.521	305.3072	0.481	0.609	0.444	0.339
304.3225	0.677	0.833	0.655	0.504	305.3087	0.464	0.608	0.436	0.320
304.3247	0.667	0.826	0.642	0.512	305.3117	0.472	0.608	0.430	0.328
304.3277	0.675	0.836	0.637	0.532	305.3131	0.481	0.627	0.437	0.330
304.3298	0.659	0.813	0.628	0.518	305.3157	0.473	0.600	0.430	0.333
304.3328	0.650	0.805	0.628	0.510	305.3172	0.468	0.623	0.451	0.351
304.3349	0.668	0.805	0.618	0.524	305.3199	0.467	0.610	0.447	0.303
304.3380	0.662	0.799	0.623	0.502	305.3214	0.480	0.622	0.446	0.334
304.3402	0.650	0.795	0.610	0.496	305.3254	0.476	0.589	0.411	0.317
304.3447	0.628	0.789	0.614	0.480	305.3270	0.468	0.612	0.429	0.311
304.3469	0.637	0.780	0.606	0.464	305.3294	0.465	0.602	0.431	0.340
304.3500	0.631	0.787	0.604	0.459	305.3309	0.448	0.596	0.420	0.303
304.3524	0.632	0.791	0.597	0.474	305.3332	0.458	0.609	0.430	0.299
304.3554	0.617	0.765	0.583	0.469	305.3348	0.444	0.605	0.432	0.335
304.3573	0.635	0.777	0.569	0.462	305.3370	0.430	0.601	0.421	0.335
304.3599	0.612	0.765	0.566	0.454	305.3385	0.470	0.614	0.433	0.349
304.3614	0.607	0.762	0.563	0.454	305.3412	0.419	0.582	0.397	0.284
304.3640	0.602	0.736	0.567	0.431	305.3428	0.438	0.574	0.386	0.271
304.3655	0.592	0.743	0.542	0.471	305.3451	0.439	0.599	0.399	0.277
304.3680	0.589	0.740	0.565	0.455	305.3467	0.458	0.612	0.424	0.284
304.3695	0.600	0.751	0.577	0.469	305.3491	0.459	0.587	0.413	0.310
304.3719	0.590	0.739	0.570	0.417	305.3508	0.458	0.590	0.410	0.307
304.3734	0.582	0.740	0.556	0.407	305.3530	0.463	0.608	0.409	0.312
304.3758	0.571	0.727	0.546	0.410	305.3544	0.461	0.596	0.415	0.317

Table 4. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
305.3581	0.450	0.587	0.406	0.284	320.2642	0.555	0.718	0.529	0.409
305.3595	0.432	0.589	0.404	0.268	320.2674	0.566	0.731	0.546	0.449
305.3619	0.440	0.591	0.406	0.304	320.2694	0.575	0.729	0.546	0.439
305.3646	0.458	0.603	0.442	0.292	320.2724	0.574	0.732	0.549	0.425
305.3670	0.436	0.583	0.410	0.283	320.2747	0.573	0.734	0.559	0.432
305.3685	0.439	0.597	0.429	0.283	320.2778	0.580	0.745	0.549	0.427
305.3708	0.437	0.593	0.430	0.300	320.2808	0.579	0.743	0.553	0.431
305.3724	0.437	0.587		0.290	320.2843	0.575	0.744	0.557	0.439
305.3750	0.424	0.555	0.386	0.253	320.2866	0.577	0.739	0.555	0.439
305.3765	0.421	0.555	0.393	0.240	320.2898	0.593	0.765	0.563	0.440
305.3791	0.432	0.580	0.412	0.259	320.2919	0.603	0.753	0.579	0.444
305.3807	0.428	0.562	0.398	0.269	320.2949	0.613	0.765	0.575	0.470
305.3833	0.455	0.599	0.443	0.308	320.2971	0.616	0.775	0.584	0.457
305.3849	0.426	0.578	0.398	0.310	320.3002	0.602	0.766	0.582	0.450
305.3875	0.405	0.556	0.379	0.281	320.3023	0.620	0.770	0.578	0.460
305.3893	0.406	0.557	0.383	0.270	320.3053	0.616	0.775	0.593	0.504
305.3929	0.418	0.580	0.388	0.293	320.3075	0.610	0.782	0.599	0.472
305.3945	0.437	0.600	0.412	0.309	322.2320	0.527	0.663	0.497	0.338
305.3983	0.421	0.572	0.388	0.298	322.2360	0.499	0.659	0.470	0.346
305.3999	0.422	0.565	0.384	0.270	322.2389	0.496	0.654	0.485	0.346
305.4024	0.415	0.553	0.366	0.276	322.2405	0.509	0.659	0.471	0.347
305.4042	0.416	0.567	0.384	0.279	322.2420	0.510	0.657	0.475	0.334
305.4068	0.425	0.576	0.397	0.283	322.2444	0.506	0.644	0.469	0.352
305.4082	0.419	0.575	0.387	0.227	322.2466	0.506	0.644	0.462	0.342
305.4107	0.412	0.558	0.370	0.227	322.2481	0.502	0.636	0.461	0.315
305.4124	0.417	0.570	0.395	0.244	322.2503	0.504	0.642	0.467	0.319
305.4148	0.399	0.550	0.376	0.233	322.2518	0.504	0.633	0.451	0.342
305.4165	0.457	0.592	0.419	0.314	322.2547	0.474	0.641	0.455	0.332
305.4190	0.416	0.551	0.392	0.294	322.2558	0.471	0.635	0.461	0.306
305.4206	0.436	0.565	0.403	0.290	322.2583	0.501	0.636	0.462	0.314
305.4235	0.424	0.560		0.249	322.2598	0.498	0.638	0.445	0.331
305.4250	0.438	0.590		0.295	322.2622	0.459	0.636	0.457	0.330
320.2285	0.521	0.669	0.488	0.370	322.2636	0.508	0.613	0.441	0.291
320.2301	0.524	0.673	0.460	0.379	322.2666	0.483	0.626	0.449	0.327
320.2326	0.511	0.684	0.476	0.380	322.2682	0.476	0.630	0.455	0.340
320.2339	0.526	0.676	0.487	0.358	322.2706	0.465	0.636	0.456	0.329
320.2363	0.511	0.682	0.484	0.389	322.2720	0.490	0.622	0.419	0.325
320.2377	0.519	0.670	0.501	0.390	322.2744	0.481	0.621	0.454	0.294
320.2400	0.530	0.678	0.490	0.402	322.2759	0.479	0.619	0.448	0.313
320.2414	0.528	0.671	0.483	0.380	322.2780	0.475	0.619	0.438	0.332
320.2437	0.548	0.674	0.467	0.353	322.2795	0.472	0.617	0.458	0.317
320.2451	0.536	0.670	0.491	0.385	322.2818	0.464	0.618	0.446	0.304
320.2474	0.548	0.704	0.495	0.397	322.2833	0.470	0.626	0.445	0.318
320.2487	0.562	0.689	0.510	0.390	322.2855	0.469	0.608	0.458	0.309
320.2510	0.522	0.692	0.504	0.397	322.2871	0.490	0.624	0.458	0.329
320.2526	0.550	0.691	0.512	0.356	322.2894	0.479	0.616	0.431	0.291
320.2548	0.559	0.715	0.535	0.430	322.2910	0.485	0.613	0.412	0.297
320.2563	0.545	0.712	0.518	0.388	322.2938	0.463	0.606	0.428	0.292
320.2587	0.554	0.715	0.513	0.427	322.2951	0.462	0.613	0.429	0.326
320.2603	0.553	0.714	0.502	0.376	322.2978	0.454	0.609	0.424	0.311
320.2625	0.540	0.702	0.528	0.418	322.2991	0.463	0.620	0.433	0.301

Table 4. (continued)

JD*	ΔV	ΔB	ΔL	ΔU	JD*	ΔV	ΔB	ΔL	ΔU
322.3014	0.471	0.603	0.430	0.304	333.2576	0.627	0.783	0.585	0.504
322.3033	0.466	0.623	0.441	0.298	333.2597	0.654	0.791	0.599	0.477
322.3057	0.457	0.589	0.420	0.299	333.2627	0.659	0.799	0.631	0.497
322.3071	0.457	0.599	0.413	0.280	333.2648	0.668	0.801	0.624	0.502
322.3099	0.433	0.582	0.398	0.269	333.2677	0.669	0.813	0.639	0.509
322.3123	0.431	0.585	0.415	0.295	333.2698	0.683	0.820	0.628	0.509
322.3147	0.443	0.609	0.405	0.292	333.2729	0.704	0.825	0.643	0.519
322.3173	0.450	0.584	0.405	0.277	333.2751	0.693	0.830	0.644	0.514
322.3195	0.443	0.591	0.412	0.267	333.2789	0.686	0.830	0.638	0.526
322.3209	0.432	0.601	0.412	0.310	333.2809	0.699	0.840	0.662	0.531
322.3234	0.436	0.595	0.412	0.262	333.2839	0.705	0.840	0.652	0.534
322.3248	0.430	0.593	0.422	0.272	333.2859	0.715	0.847	0.668	0.537
322.3272	0.422	0.591	0.406	0.290	333.2890	0.727	0.811		0.572
322.3288	0.428	0.591	0.427	0.310	333.2911	0.723	0.869	0.692	0.540
322.3314	0.418	0.583	0.400	0.268	333.2954	0.735	0.874	0.670	0.560
322.3328	0.456	0.589	0.413	0.294	333.2976	0.730	0.861	0.661	0.538
322.3353	0.430	0.585	0.390	0.277	333.3014	0.733	0.870	0.682	0.564
322.3367	0.432	0.577	0.372	0.263	333.3040	0.731	0.874	0.676	0.571
322.3392	0.451	0.590	0.390	0.263	333.3073	0.738	0.879	0.692	0.584
322.3407	0.434	0.590	0.414	0.255	333.3098	0.745	0.894	0.721	0.609
322.3429	0.445	0.574	0.412	0.265	333.3140	0.738	0.907	0.721	0.605
322.3445	0.431	0.575	0.400	0.294	333.3166	0.742	0.894	0.701	0.611
333.2152	0.580	0.721	0.537	0.395	333.3199	0.759	0.929	0.720	0.619
333.2168	0.580	0.749	0.544	0.429	333.3222	0.754	0.904	0.714	0.630
333.2194	0.616	0.759	0.563	0.429	333.3256	0.758	0.915	0.722	0.601
333.2209	0.584	0.744	0.547	0.450	333.3278	0.782	0.940	0.742	0.633
333.2234	0.595	0.761	0.554	0.450	333.3312	0.785	0.929	0.735	0.632
333.2249	0.577	0.745	0.548	0.423	333.3337	0.767	0.938	0.737	0.626
333.2274	0.591	0.739	0.560	0.436	333.3368	0.780	0.913	0.726	0.623
333.2290	0.619	0.754	0.558	0.461	333.3392	0.791	0.927	0.745	0.627
333.2320	0.619	0.759	0.574	0.448	333.3418	0.801	0.936	0.740	0.622
333.2340	0.619	0.759	0.567	0.464	333.3448	0.778	0.928	0.738	0.633
333.2369	0.624	0.759	0.594	0.456	333.3478	0.776	0.931	0.739	0.624
333.2391	0.625	0.768	0.582	0.469	333.3500	0.778	0.952		
333.2421	0.608	0.772	0.586	0.485	333.3528	0.780	0.931	0.745	0.588
333.2441	0.602	0.772	0.592	0.469	333.3550	0.756	0.932	0.729	0.578
333.2473	0.616	0.768	0.570	0.482	333.3580	0.783	0.927	0.724	0.585
333.2494	0.619	0.775	0.579	0.485	333.3602	0.760	0.906	0.709	0.600
333.2524	0.608	0.759	0.555	0.460	333.3633	0.783	0.951	0.774	0.662
333.2546	0.616	0.769	0.585	0.475	333.3653	0.773	0.922	0.726	0.593

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