calibrated lightcurve plot, these data points reside at a V magnitude of 14.60.

The overall success and precision of this simplified approach is dependent upon on how closely each of the three observing precepts is followed. It is worth emphasizing that this method, as described, makes an implicit assumption that sky conditions are uniform. Obviously the better the photometric conditions, the better the result. One worthwhile check is to plot comparison star instrumental magnitudes versus air mass, where a linear relationship confirms the constancy of the night – particularly at the time of standard star calibration. Additional steps that add increasing complexity (with the benefit of improving the precision) include the assumption of some nominal extinction coefficient (say 0.1 magnitude/airmass or other value typical for your site) so that all of your measurements in observing step 3 have first order extinction removed as a source of error. (This also reduces some of the time pressure to make all measurements simultaneously at the same airmass.) Obtaining clear (c) filter images of the standard stars, so that ($v_s - c_s$) instrumental colors of the standards can be compared with the ($v_a - c_a$) instrumental color of the asteroid, may constrain the choice of standard stars to those that are most 'asteroid-like', reducing unknown color correction terms. Likewise, the scatter or trend revealed by making a plot of calculated standard star V_s - v_s values versus their V-R catalogue values can reveal a color term for your photometric system, or at least give a good indication of the overall precision you have likely achieved in your calibrations.

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LIGHTCURVE PHOTOMETRY OPPORTUNITIES OCTOBER-DECEMBER 2005

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We present here three lists of "targets of opportunity" for the period 2005 October – December. The first list is those asteroids reaching a favorable apparition during this period, are <15m at brightest, and have either no or poorly constrained lightcurve parameters. These circumstances make the asteroids particularly good targets for those with modest "backyard" telescopes, i.e., 0.2-0.5m.

The goal for these asteroids is to find a well-determined rotation rate, if at all possible. Don't hesitate to solicit help from other observers at widely spread longitudes should the initial finding for the period indicated that it will be difficult for a single station to find the period. This could be for the fact that the period has a multiple almost exactly equal to the interval between observing runs or the period is long, i.e., 18 hours to several days.

The Low Phase Angle list includes asteroids that reach very low phase angles. Getting accurate, calibrated measurements (usually V band) at or very near the moment of opposition can provide important information for those studying the "opposition effect", which is when objects near opposition brighten more than simple geometry would allow.

With current methods under common use, it's required to get several lightcurves spread from different apparitions in order to generate a model of the asteroid. The final list is those asteroids needing only a small number of lightcurves to allow Kaasalainen and others to work on a shape model.

We encourage anyone doing lightcurve work to publish their results in the *Minor Planet Bulletin* and, if nothing else, make the data available on a personal website. Previous issues have covered larger upload sites such as OLAF, SAPC, and the ADU. For more information about those sites, please contact Warner at the email address given above.

Lightcurve Opportunities

#	Name	Brightest Date	V	Dec	U	Harris Per.	Data Amp.
7760	1990 RW3	10 02.8	14.9	+02	0		
1016	Anitra	10 02.7	13.6	+04	2	5.964	0.30
7776	Takeishi	10 03.1	14.7	+21	0		
3283	Skorina	10 03.1	14.9	+07	0		
962	Aslog	10 03.5	14.8	+01	0		
1906	Naef	10 04.8	14.6	+08	0		
3994	Ayashi	10 06.1	14.6	+01	0		
2004	Lexell	10 06.1	14.4	+06	0		
5580	Sharidake	10 06.9	14.7	+05	0		
6249	Jennifer	10 09.6	13.9	+33	0		
3312	Pedersen	10 10.6	14.9	+11	0		
1967	Menzel	10 14.6	13.9	+04	0		
8400	Tomizo	10 15.6	14.4	-14	1	>20.	>0.1
1139	Atami	10 15.7	12.5	+15	2	>15.	>0.15
4324	1981 YA1	10 15.9	14.1	+22	2	26.5	0.63
15607	2000 GA124	10 16.0	15.0	-07	0		
2757	Crisser	10 16.9	14.5	+09	0		
2034	Bernoulli	10 21.1	14.5	+13	0		
2016	Heinemann	10 21.2	14.5	+11	0		
14257	2000 AR97	10 22.9	14.2	+07	0		
16403	1984 WJ1	10 23.5	13.8	+10	0		
29495	1997 WU7	10 23.9	14.8	+10	0		
5994	Yakubovich	10 25.0	14.5	+12	0		
31889	2000 FW35	10 25.4	14.9	-12	0		
14276	2000 CF2	10 26.1	14.0	+13	0		
8830	1988 VZ	10 28.2	15.0	+13	0		
15365	1996 HQ9	10 28.1	15.0	+15	0		
3583	Burdett	10 28.8	15.0	+13	0		
2839	Annette	10 28.8	13.6	+12	0		
1662	Hoffmann	10 29.3	13.9	+20	0		
31060	1996 TB6	10 29.9	14.8	+16	0		
831	Stateira	10 29.4	14.3	+08	0		
2335	James	10 29.4	14.8	+51	0		
2871	Schober	10 30.2	14.5	+15	0		
406	Erna	10 30.9	13.5	+21	0		
838	Seraphina	10 31.3	13.4	+20	2	16.2	0.30
2099	Opik	11 01.4	14.7	+15	2	9.3	0.7
4661	Yebes	11 02.0	15.0	+07	0		
6097	Koishikawa	11 02.8	14.9	+12	0		
3998	Tezuka	11 03.6	14.5	+22	0		
46354	2001 TY8	11 04.1	14.9	+16	0		
5565	Ukyounodaibu	11 04.8	14.6	-02	0		
15350	Naganuma	11 05.4	14.7	+12	0		
2266	Tchaikovsky	11 05.1	14.6	+18	0		
3899	Wichterle	11 06.9	14.5	+14	0		
2006	Polonskaya	11 07.0	14.1	+23	0		
5477	1989 UH2	11 07.9	14.6	+13	0		
35618	1998 HC149	11 07.9	14.9	+11	0		
1447	Utra	11 10.3	14.2	+19	0		
4914	Pardina	11 10.1	14.4	+27	2	4.142	0.23
14835	Holdridge	11 10.9	14.4	+22	0		
6086	1987 VU	11 11.4	15.0	+13	0		
4121	Carlin	11 11.5	14.5	+20	0		
1912	Anubis	11 15.1	14.7	+17	0		
27136	1998 XJ16	11 16.9	14.8	+05	0		
7775	Taiko	11 16.7	14.9	+24	0		
2774	Tenojoki	11 18.9	14.9	+30	0		
1771	Makover	11 18.4	13.5	+10	0		
27057	1998 SP33	11 21.9	14.9	+31	0		
2044	Wirt	11 22.2	14.0	+27	0		
2107	Ilmari	11 22.4	14.4	+16	0		
6153	Hershey	11 22.4	14.2	-01	0		
1600	Vyssotsky	11 22.7	12.8	+20	2	3.2	0.13
503	Evelyn	11 22.2	11.8	+19	2	38.7	0.5
7201	Kuritariku	11 27.1	15.0	+25	0		
712	Boliviana	11 28.1	10.5	+15	2	11.732	0.11
2781	Kleczek	11 30.5	15.0	+18	0		
1671	Chaika	12 03.3	13.6	+14	0		
16941	1998 GR7	12 04.0	15.0	+13	0		
1639	Bower	12 06.9	13.6	+37	2	12.5	0.15
4608	1988 BW3	12 06.5	14.6	+11	0		
34706	2001 OP83	12 07.2	14.2	+26	0		
2464	Nordenskiold	12 07.1	14.5	+24	0		
2545	Verbiest	12 07.6	14.8	+34	0		
2040	Chalonge	12 08.9	14.8	+37	0		
316	Goberta	12 09.9	13.3	+20	0		
3981	Stodola	12 09.0	15.0	+23	0		
3511	Tsvetaeva	12 11.9	14.9	+15	0		
1857	Parchomenko	12 11.9	14.0	+20	0		
481	Emita	12 13.5	11.3	+28	2	14.35	0.30
5096	Luzin	12 14.1	14.9	+36	0		
1412	Lagrula	12 20.9	14.5	+27	0		

Lightcurve Opportunities (cont'd)

#	Name	Brightest Date	V	Dec	U	Harris Per.	Data Amp.
2886	Tinkaping	12 24.6	14.9	+23	1	12.	>0.13
814	Tauris	12 24.5	11.9	+26	2	35.8	0.20
461	Saskia	12 27.2	13.8	+21	0		
1733	Silke	12 27.2	14.9	+16	0		
2372	Proskurin	12 29.1	14.8	+23	0		
3905	Doppler	12 30.4	14.9	+48	0		

Low Phase Angle Opportunities

#	Name	Date	PhA	V	Dec
1016	Anitra	10 02.6	0.22	13.7	+04
5567	Durisen	10 04.6	0.47	13.7	+06
114	Kassandra	10 05.7	0.70	12.9	-03
35	Leukothea	10 07.1	0.83	13.1	-07
171	Ophelia	10 07.1	0.67	13.5	-04
250	Bettina	10 09.0	0.46	13.2	-05
578	Happelia	10 14.7	0.54	12.5	+07
242	Kriemhild	10 16.0	0.51	13.0	+10
510	Mabella	10 18.2	0.25	12.7	+09
69	Hesperia	10 20.2	0.82	12.5	-08
721	Tabora	10 25.7	0.44	13.6	+11
419	Aurelia	10 26.0	0.64	12.0	+14
14276	2000 CF2	10 26.1	0.20	14.0	+13
2839	Annette	10 28.8	0.87	13.6	+12
448	Natalie	11 04.4	0.57	14.0	+17
19	Fortuna	11 04.5	0.34	8.9	+15
976	Benjamina	11 10.5	0.89	14.0	+20
332	Siri	11 11.1	0.48	12.9	+19
13	Egeria	11 11.8	0.51	11.7	-19
694	Ekard	11 11.9	0.25	11.2	+18
83	Beatrix	11 19.3	0.74	13.1	-21
753	Tiflis	11 21.1	0.17	13.9	-20
10	Hygiea	11 21.8	0.70	10.6	-22
503	Evelyn	11 22.1	0.59	11.8	+19
1600	Vyssotsky	11 22.7	0.31	12.8	+20
416	Vaticana	11 27.8	0.70	12.6	+24
1249	Rutherfordia	12 02.7	0.65	13.5	+23
514	Armida	12 03.1	0.61	13.0	+24
455	Bruchsalia	12 10.2	0.27	11.6	+24
241	Germania	12 12.2	0.25	13.1	-24
552	Sigelinde	12 18.1	0.07	14.0	+24
410	Chloris	12 19.0	0.64	12.4	-22
1687	Glarona	12 28.1	0.10	13.6	+23
1	Ceres	12 28.4	0.77	8.7	-26

Shape/Spin Modeling Opportunities

#	Name	Brightest Date	V	Dec	Per (h)	Amp.	U
47	Aglaja	12 31.	12.9	+16	13.20	0.03-0.17	4
51	Nemausa	10 04.1	10.5	+00	7.783	0.10-0.14	4 3
79	Eurynome	12 31.	12.6	-09	5.978	0.05-0.24	4
93	Minerva	12 01.3	12.1	+33	5.982	0.04-0.10	4
125	Liberatrix	12 31.	14.1	+03	3.968	0.29-0.71	4
165	Loreley	12 21.4	12.4	+32	7.226	0.12-0.15	2
173	Ino	12 31.	12.8	-16	6.163	0.04-0.11	4
221	Eos	10 19.9	11.7	-04	10.436	0.04-0.11	4
344	Desiderata	11 18.5	12.1	+24	10.77	0.17	3
386	Siegena	10 13.0	10.7	-10	9.763	0.11	3
416	Vaticana	11 27.8	12.6	+24	5.372	0.17-0.38	4
419	Aurelia	10 25.8	12.0	+14	16.709	0.08	2 A
683	Lanzia	12 31.	13.4	+24	8.630	0.12	3 4
747	Winchester	12 31.	12.5	-20	9.402	0.08-0.13	4

Note that the amplitude in the table just above could be more, or less, than what's given. Use the listing as a guide and double-check your work. Also, if the date is '1 01.' Or '12 31. ', i.e., there is no value after the decimal, it means that the asteroid reaches its brightest just as the year begins (it gets dimmer all year) or it reaches its brightest at the end of the year (it gets brighter all year).