Absolute magnitudes of asteroids and a revision of asteroid albedo estimates from WISE thermal observations

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Abstract

We obtained estimates of the Johnson V absolute magnitudes (H) and slope parameters (G) for 583 main-belt and near-Earth asteroids observed at Ondřejov and Table Mountain Observatory from 1978 to 2011. Uncertainties of the absolute magnitudes in our sample are < 0.21 mag, with the median value of 0.09 mag. We compared the H data with absolute magnitude values given in the MPCORB, Pisa AstDyS and JPL Horizons orbit catalogs. We found that while the catalog absolute magnitudes for large asteroids are relatively good on average, showing only little biases smaller than 0.1 mag, there is a systematic offset of the catalog values for smaller asteroids that becomes prominent in a range of H greater than ~ 10 and is particularly big above $H \sim 12$. The mean $(H_{\text{catalog}} - H)$ value is negative, i.e., the catalog H values are systematically too bright. This systematic negative offset of the catalog values reaches a maximum around $H = 14$ where the mean $(H_{\text{catalog}} - H)$ is -0.4 to -0.5. We found also certain correlations of the offset of the catalog H values with taxonomic types and with lightcurve amplitudes. We discuss a few possible observational causes for the observed correlations, but a major reason for the huge bias of the catalog absolute magnitudes peaking around $H = 14$ is unknown; we suspect that a main problem lies in the magnitude estimates reported by asteroid surveys. With our photometric H and G data, we revised the preliminary WISE albedo estimates made by Masiero et al. (Astrophys. J. 741, 68–89, 2011) and Mainzer et al. (Astrophys. J. 743, 156–172, 2011) for asteroids in our sample. We found that the mean geometric albedo of Tholen/Bus/DeMeo C/G/B/F/P/D types with sizes of 25–300 km is $p_V = 0.057$ with the standard deviation (dispersion) of the sample of 0.013 and the mean albedo of S/A/L types with sizes 0.6 to 200 km is 0.197 with the standard deviation of the sample of 0.051. The standard errors of the mean albedos are 0.002 and 0.006, respectively; systematic observational or modeling errors can predominate over the quoted formal errors. There is apparent only a small, marginally significant difference of 0.031 ± 0.011 between the mean albedos of sub-samples of large and small (divided at diameter 25 km) S/A/L asteroids. The apparent small difference will have to be confirmed and explained; we speculate that it may be either a real size dependence of surface properties of the differentiated asteroid types or due to small size-dependent systematic effects in their observations or thermal models. A trend of the mean of the preliminary WISE albedo estimates increasing with decreasing asteroid size below $D \sim 30$ km showed in Mainzer et al. (Astrophys. J. 741, 90–114, 2011) was explained as being due to the systematic bias in the MPCORB absolute magnitudes.

1 Introduction

Diameters and albedos of asteroids are their basic physical parameters. Asteroid diameters can be estimated with several direct or indirect techniques. Direct size estimation techniques include in-situ spacecraft observations, resolved imaging with adaptive optics systems or radar observations, and asteroid occultations of stars. An efficient use of the direct techniques is, however, limited to mostly large asteroids or those making close approach. Among indirect techniques of asteroid size estimation that can be applied to a large sample of asteroids covering a broad range of sizes, the most powerful is a technique of asteroid thermal modeling with observations of their thermal infrared and visual fluxes; the effective diameter and visual geometric albedo are parameters of asteroid thermal models.

Ideally, both the integral thermally emitted infrared and the integral reflected optical fluxes should be measured simultaneously. In practice, however, thermal observations are normally made at a single or over a limited range of aspects, and it has become a normal practice for asteroid thermal modellers to estimate the integral optical flux from the asteroid's absolute visual magnitude H and modeling its phase function. The absolute magnitude of a Solar System object is defined as the apparent magnitude of the object illuminated by the solar light flux at 1 AU and observed from the distance of 1 AU and at zero phase angle.

Absolute magnitudes of asteroids are estimated from their photometric observations. As the observations are generally taken at non-zero solar phase angles, an estimation of H involves an estimation of a dependence of the asteroid brightness on the phase angle. The dependence is most often modeled with the H–G phase relation (Bowell et al., 1989) that has conveniently only two free parameters, the absolute magnitude H and the slope parameter G. A systematic model error of the H–G phase relation is on an order of a few 0.01 mag (Harris, 1989).

Recent thermal infrared survey observations by the *Wide-field Infrared Survey Explorer (WISE)*, AKARI and the *Spitzer Space Telescope* resulted in estimating diameters and albedos for thousands of asteroids (e.g., Mainzer et al., 2011a,b; Masiero et al., 2011; Usui et al., 2011; Ryan and Woodward, 2011). They used the absolute magnitude values from the asteroid orbit catalogs MPCORB [1] or AstOrb. [2] Most of the absolute magnitudes in the catalogs were derived from magnitude estimates reported by visual asteroid surveys and follow-up observers with their astrometric observations. The procedures that most of the astrometric surveys, follow-up observers, and orbit calculators used for estimating the asteroid apparent magnitudes and derivation of the H values have not been comprehensively published so far.

[1] http://www.minorplanetcenter.org/iau/MPCORB.html.
[2] ftp://ftp.lowell.edu/pub/elgb/astorb.html.

Given the principal importance of asteroid absolute magnitudes data for the estimation of their diameters and albedos and considering that an accuracy of and biases present in the H values in the orbit catalogs have not been satisfactorily characterized so far,[3] we investigated them by comparing the catalog H values with our absolute magnitude estimates for a sample of 583 main-belt and near-Earth asteroids that we observed photometrically within our asteroid lightcurve observations projects over the past 33 years.

2 Absolute magnitudes H data sample

Our sample consists of absolute magnitude estimates that we derived from our photometric observations of asteroids that we made from Ondřejov Observatory, Czech Republic, and Table Mountain Observatory, California, from 1978 to 2011. The observations were made within our projects aimed at estimation of spins, shapes, and binary nature of asteroids in the main belt and on inner-planet crossing orbits. About a half of the H data in our sample we published in a series of papers (see their list below Table 2). A part of the H estimates is new data that we derived more recently. Most of the observations of asteroids in our sample were targeted observations — the asteroids were selected and observed deliberately for particular aims of the specific photometric projects. A fraction (96 of the 583) were, however, accidental observations of asteroids that happened to be present in the imaged fields of the targeted asteroids. We outline our observational and reduction procedures in following paragraphs.

2.1 Absolute calibrations in the Johnson-Cousins BVRI system

We made the observations primarily through the V or R filters and calibrated them in the Johnson-Cousins system using the Landolt standard stars (Landolt, 1973, 1983, 1992). We observed some of the asteroids also in other than just the primary filter and in such cases we estimated their actual color indices. Many of the asteroids were, however, observed in only the primary filter, R in the case of the Ondřejov observations as with the CCD cameras we got a higher signal-to-noise ratio and a lower atmospheric extinction with observations in the R than in the V band. A spectral transmission curve of the R filter was designed for a given CCD so that the resulting spectral response of the telescope+filter+CCD combination matched closely the Cousins R passband as defined in Bessell (1990); the coefficient of the color term with $(V - I)$ in

[3] Actually, we had a suspicion that there is present a significant bias in the orbit catalog H data for many years already. We and other observers noticed that our photometric observations of asteroids smaller than about 20 km typically showed them being fainter than predicted using the catalog H values. Results from three earlier papers showing the offset by comparing the catalog magnitudes with data from the Sloan Digital Sky Survey are presented in Section 3.3.

the photometric transformation function of the telescope system was always within 0.05 of zero. With such filter+CCD setup, we were able to calibrate the asteroid photometric observations in the Cousins R system assuming $(V-I)$ of 0.80, which is about the average asteroidal color index, with a systematic error < 0.01 mag; note that the most common C and S asteroid types have the mean $(V-I)$ of 0.73 and 0.90, respectively (Shevchenko and Lupishko, 1998).

2.2 Mean brightness level estimation

For derivation of the mean absolute magnitude H of an asteroid corresponding to its mean cross-section, we need to estimate its mean reduced magnitude that is the asteroid's apparent magnitude reduced to the unit geo- and heliocentric distances and to a normal phase angle that is close to the mid-range of solar phases covered by the observations. In most cases, we estimated the mean reduced magnitude as the zeroth order of the 1-period (or 2-period, for tumblers) Fourier series, or two additive 1-period Fourier series in the case of a binary asteroid where lightcurves of both the primary and the secondary components were observed, fitted to the photometric observations made over one or more nearby nights that covered the rotation lightcurve sufficiently (see the references below Table 2 for details of the technique). An uncertainty of the mean reduced magnitude estimated in these cases was mostly < 0.01 mag. In a fraction of asteroids in our sample, mostly some long-period ones, where we did not obtain sufficient data to get an accurate Fourier series fit or where the rotation period has not been estimated with sufficient accuracy, we estimated the asteroid's mean brightness either as the mean value of a range in which the Fourier series zeroth order lie for a range of possible and plausible fits to the observations, or as an average of the observations made during one or more nearby nights in cases where even a range of possible Fourier series fits could not be obtained. In all the cases with limited or no Fourier fits available, we paid attention to that the resulted mean magnitude estimate had an uncertainty < 0.2 mag. Even in cases with the least constrained lightcurves, we required an evidence that either the asteroid's total amplitude was small to moderate so that the mean level estimated as an average of the observations could not be off by more than 0.2 mag, or that the observations covered a sufficient range of rotational phases so that the average of the observations was close to the mean brightness level.

2.3 Reduction to zero phase angle

The absolute magnitude H is defined as the reduced magnitude at zero phase angle. The mean magnitudes observed at non-zero phase angles were reduced to zero phase using the H–G phase relation. For nearly half of our observed asteroids, we got sufficient data to estimate the slope parameter G from the observations. For the rest, we assumed G based on their taxonomic classification where available and conclusive or on their orbital group membership. The assumed default G values were taken from Tables 2 and 3 of Warner et al. (2009) in most cases. For some H estimates that we published before (see the references in Table 2), we assumed slightly different default values of G based on earlier works, e.g., 0.23 ± 0.11 instead of the new default 0.24 ± 0.11 for S types, or 0.09 ± 0.09 instead of the new default 0.12 ± 0.08 for C types; we kept those earlier estimates in such cases as the differences are minor and well within the uncertainties. The uncertainties of the assumed default G values were propagated to the estimated uncertainties of the resulted H values.

The uncertainties in the G values were the most significant source of uncertainty for the H estimates for many asteroids in our sample. As we aimed to get H values with uncertainties not greater than 0.2 mag, we limited our sample to include asteroids that were observed at solar phases not greater than $\sim 30°$, which gave an uncertainty in resulting H of ± 0.16 and ± 0.14 for the default G of S and C types, respectively, with only a few exceptions in justified cases.

2.4 Derivation of H from H_R

Most of the Ondřejov observations were taken in the Cousins R. We transformed the estimated H_R values to $H \equiv H_V$ by adding the mean color index $(V - R)$ for known or assumed (according to its orbital group membership) taxonomic class of a given asteroid. The mean color indices for the major classes S, C and M (X) in the taxonomic system of Tholen (1984, 1989) were taken from Shevchenko and Lupishko (1998). For other, smaller classes Q, A, D, Xc, Xe and V in the Bus–DeMeo taxonomy, we derived the mean color index from the mean reflectance spectrum of a given class provided by DeMeo et al. (2009), assuming solar $(V - R) = 0.367$. The mean $(V - R)$ values are listed in Table 1. For three asteroids with an ambiguous classification of S or A, we assumed $(V - R) = 0.528 \pm 0.05$ which is the average of the mean color indices for the two classes. For asteroids with unknown spectral class, we used the mean $(V - R)$ for a class predominating in their respective orbital group according to Table 2 of Warner et al. (2009). We note that our $(V - R)$ estimates derived from the mean spectra for the Bus-DeMeo classes are in agreement with the color indices for the analogous Tholen classes derived from the mean colors in the eight-color asteroid survey for their specific CCD and filter responses by Dandy et al. (2003) for all but the V class. The V-type broad-band color depends critically on the exact R passband as there is the deep pyroxene band in the far red, which may explain their different $(V - R)$ estimate.

Table 1
Mean color indices $(V-R)$ used for conversion of H_R to H

Class	$(V-R)$	Reference
S	0.49 ± 0.05	Shevchenko and Lupishko (1998)
Q	0.454 ± 0.023	from mean Q spectrum by DeMeo et al. (2009)
A	0.567 ± 0.023	from mean A spectrum by DeMeo et al. (2009)
C	0.38 ± 0.05	Shevchenko and Lupishko (1998)
D	0.455 ± 0.033	from mean D spectrum by DeMeo et al. (2009)
T	0.442 ± 0.011	from mean T spectrum by DeMeo et al. (2009)
X	0.42 ± 0.04	Shevchenko and Lupishko (1998)
Xc	0.408 ± 0.008	from mean Xc spectrum by DeMeo et al. (2009)
Xe	0.453 ± 0.037	from mean Xe spectrum by DeMeo et al. (2009)
V	0.516 ± 0.037	from mean V spectrum by DeMeo et al. (2009)

2.5 Averaging H estimates from different apparitions

For 38 of the 583 asteroids in our sample, we have got more than one H estimate, mostly from observations made in different apparitions. In all but one of the cases, we computed the mean H value as a weighted mean of the individual estimates, with weights of δH^{-2}. The exception was (1866) Sisyphus where the two H estimates differ by 0.38 mag that we suspect is due to different cross-sections at the two different aspects of the asteroid in the two apparitions rather than due to uncertainties of the H estimates; we used a simple average of the two values, i.e., assumed equal weights.

2.6 Uncertainties of the H estimates

We estimated the uncertainties δH of our absolute magnitude estimates by propagating the uncertainties resulting from the individual error sources mentioned above. All the H estimates in our sample have $\delta H < 0.21$ mag. They are realistic estimated uncertainties for the absolute magnitudes measured at the observed aspects of the asteroids. We note, however, that an asteroid generally has different H values at different aspects. A magnitude of the difference depends on a shape of the asteroid and its rotation pole position. Analysing the data for a sample of large asteroids by Drummond et al. (1988, 1991) who derived dependences of their H values on observing aspect, we estimated the median dispersion of the observed H values of 0.07 mag. The aspect/shape-related uncertainty must be considered or accounted for when the H value estimated from observations made at a specific aspect is used for other observations made at a different aspect.

The estimated absolute magnitudes, their uncertainties, estimated or assumed slope parameter values and mean lightcurve amplitudes are listed in Table 2.

Table 2: H data

Asteroid		H	δH	G	δG	$H_{\rm MPC}$	$G_{\rm MPC}$	$H_{\rm AsD}$	$G_{\rm AsD}$	$H_{\rm JPL}$	$G_{\rm JPL}$	$H_{\rm MPC} - H$	$H_{\rm AsD} - H$	$H_{\rm JPL} - H$	Ampl.	Reference(s)
3	Juno	5.280	0.040	0.320	0.040	5.33	0.32	5.37	0.32	5.33	0.32	0.050	0.090	0.050	0.15	2
8	Flora	6.560	0.110	0.320	0.110	6.49	0.28	6.56	0.28	6.49	0.28	-0.070	0.000	-0.070	0.08	1
9	Metis	6.330	0.120	0.230	0.110	6.30	0.15	6.25	0.17	6.28	0.17	-0.030	-0.080	-0.050	0.20	1
11	Parthenope	6.570	0.030	0.240	0.030	6.55	0.15	6.57	0.15	6.55	0.15	-0.020	0.000	-0.020	0.05	3
12	Victoria	7.060	0.010	0.220	0.020	7.24	0.22	7.21	0.22	7.24	0.22	0.180	0.150	0.180	0.08	4
16	Psyche	5.930	0.060	0.210	0.060	5.90	0.20	6.02	0.20	5.90	0.20	-0.030	0.090	-0.030	0.21	4
17	Thetis	7.900	0.100	0.230	0.110	7.76	0.15	7.71	0.15	7.76	0.15	-0.140	-0.190	-0.140	0.28	3
19	Fortuna	7.152	0.020	0.162	0.030	7.20	0.15	7.21	0.10	7.13	0.10	0.048	0.058	-0.022	0.23	3, 4
24	Themis	7.088	0.008	0.180	0.020	7.20	0.15	7.21	0.19	7.08	0.19	0.112	0.122	-0.008	0.09	2
30	Urania	7.530	0.020	0.230	0.000	7.60	0.15	7.59	0.15	7.53	0.15	0.070	0.060	0.000	0.11	12
31	Euphrosyne	6.700	0.040	0.090	0.090	6.80	0.15	6.78	0.15	6.74	0.15	0.100	0.080	0.040	0.05	1
33	Polyhymnia	8.564	0.008	0.340	0.020	8.50	0.15	8.63	0.33	8.55	0.33	-0.064	0.066	-0.014	0.20	1
37	Fides	7.328	0.006	0.270	0.007	7.29	0.24	7.39	0.24	7.29	0.24	-0.038	0.062	-0.038	0.13	1
38	Leda	8.315	0.040	0.090	0.090	8.40	0.15	8.36	0.15	8.32	0.15	0.085	0.045	0.005	0.10	1, 4
45	Eugenia	7.422	0.005	0.130	0.006	7.50	0.15	7.44	0.07	7.46	0.07	0.078	0.018	0.038	0.18	4
46	Hestia	8.400	0.020	0.120	0.040	8.50	0.15	8.38	0.06	8.36	0.06	0.100	-0.020	-0.040	0.08	4
47	Aglaja	7.861	0.007	0.178	0.020	8.00	0.15	8.01	0.16	7.84	0.16	0.139	0.149	-0.021	0.02	1
53	Kalypso	8.660	0.040	0.090	0.090	8.80	0.15	8.81	0.15	8.81	0.15	0.140	0.150	0.150	0.05	1
57	Mnemosyne	7.090	0.020	0.220	0.040	7.03	0.15	6.89	0.15	7.03	0.15	-0.060	-0.200	-0.060	0.11	3
58	Concordia	8.860	0.100	0.090	0.090	8.90	0.15	8.96	0.15	8.86	0.15	0.040	0.100	0.000	0.10	3
60	Echo	8.484	0.007	0.250	0.005	8.21	0.27	8.52	0.27	8.21	0.27	-0.274	0.036	-0.274	0.11	2
62	Erato	8.600	0.100	0.090	0.090	8.70	0.15	8.61	0.15	8.76	0.15	0.100	0.010	0.160	0.20	3
70	Panopaea	8.100	0.060	0.130	0.100	8.00	0.15	8.01	0.14	8.11	0.14	-0.100	-0.090	0.010	0.10	1
71	Niobe	7.310	0.090	0.400	0.140	7.30	0.40	7.31	0.40	7.30	0.40	-0.010	0.000	-0.010	0.11	1
72	Feronia	8.790	0.010	0.000	0.010	8.94	0.15	8.99	0.15	8.94	0.15	0.150	0.200	0.150	0.11	3
75	Eurydike	8.970	0.010	0.230	0.020	8.96	0.23	8.96	0.23	8.96	0.23	-0.010	-0.010	-0.010	0.10	1
76	Freia	7.864	0.008	0.070	0.010	7.90	0.15	7.92	0.15	7.90	0.15	0.036	0.056	0.036	0.10	3
77	Frigga	8.522	0.006	0.160	0.010	8.60	0.15	8.55	0.16	8.52	0.16	0.078	0.028	-0.002	0.07	1
78	Diana	8.018	0.005	0.080	0.009	8.09	0.08	8.13	0.08	8.09	0.08	0.072	0.112	0.072	0.02	1
88	Thisbe	7.030	0.140	0.090	0.090	7.10	0.15	7.19	0.14	7.04	0.14	0.070	0.160	0.010	0.10	3
93	Minerva	7.504	0.030	-0.006	0.030	7.80	0.15	7.80	0.15	7.70	0.15	0.296	0.296	0.196	0.06	1, 4
96	Aegle	7.650	0.070	0.090	0.090	7.60	0.15	7.59	0.15	7.67	0.15	-0.050	-0.060	0.020	0.10	1
99	Dike	9.350	0.130	0.090	0.090	9.50	0.15	9.44	0.15	9.43	0.15	0.150	0.090	0.080	0.20	3
101	Helena	8.327	0.005	0.320	0.010	8.20	0.15	8.32	0.35	8.33	0.35	-0.127	-0.007	0.003	0.11	1
102	Miriam	9.300	0.200	0.090	0.090	9.30	0.15	9.27	0.15	9.26	0.15	0.000	-0.030	-0.040	0.16	3
106	Dione	7.410	0.060	0.090	0.090	7.41	0.15	7.50	0.15	7.41	0.15	0.000	0.090	0.000	0.10	3
107	Camilla	7.100	0.020	0.090	0.090	7.10	0.15	7.06	0.08	7.08	0.08	0.000	-0.040	-0.020	0.41	1
109	Felicitas	8.759	0.008	0.030	0.008	8.90	0.15	8.74	0.04	8.75	0.04	0.141	-0.019	-0.009	0.06	1
114	Kassandra	8.275	0.020	0.090	0.090	8.20	0.15	8.23	0.15	8.26	0.15	-0.075	-0.045	-0.015	0.12	1, 3
125	Liberatrix	8.900	0.020	0.220	0.090	8.80	0.15	8.91	0.33	9.04	0.33	-0.100	0.010	0.140	0.30	3
127	Johanna	8.370	0.120	0.090	0.090	8.30	0.15	8.45	0.15	8.30	0.15	-0.070	0.080	-0.070	0.18	4
130	Elektra	6.990	0.040	0.090	0.090	7.12	0.15	7.00	0.15	7.12	0.15	0.130	0.010	0.130	0.32	1
132	Aethra	9.200	0.150	0.210	0.000	9.38	0.15	8.94	0.15	9.21	0.15	0.180	-0.260	0.010	0.24	12
133	Cyrene	7.990	0.013	0.130	0.020	7.90	0.15	7.90	0.13	7.98	0.13	-0.090	-0.090	-0.010	0.26	1

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}}-H$	$H_{\mathrm{AsD}}-H$	$H_{\mathrm{JPL}}-H$	Ampl.	Reference(s)
134	Sophrosyne	8.770	0.010	0.280	0.020	8.76	0.28	8.75	0.28	8.76	0.28	-0.010	-0.020	-0.010	0.18	1
135	Hertha	8.100	0.040	0.240	0.040	8.23	0.15	8.16	0.15	8.23	0.15	0.130	0.060	0.130	0.12	3
137	Meliboea	8.100	0.050	0.090	0.090	8.10	0.15	8.01	0.15	8.05	0.15	0.000	-0.090	-0.050	0.10	1
139	Juewa	7.924	0.010	0.150	0.010	7.90	0.15	7.89	0.15	7.78	0.15	-0.024	-0.034	-0.144	0.18	4
144	Vibilia	7.920	0.020	0.170	0.040	8.00	0.15	8.03	0.17	7.91	0.17	0.080	0.110	-0.010	0.14	1
145	Adeona	8.050	0.070	0.090	0.090	8.10	0.15	8.08	0.15	8.13	0.15	0.050	0.030	0.080	0.04	1
146	Lucina	8.277	0.020	0.186	0.030	8.20	0.11	8.24	0.11	8.20	0.11	-0.077	-0.037	-0.077	0.14	1, 4
148	Gallia	7.400	0.100	0.090	0.090	7.63	0.15	7.61	0.15	7.63	0.15	0.230	0.210	0.230	0.07	3
154	Bertha	7.530	0.080	0.090	0.090	7.60	0.15	7.61	0.15	7.58	0.15	0.070	0.080	0.050	0.20	1
156	Xanthippe	8.310	0.090	-0.120	0.080	8.60	0.15	8.64	0.15	8.64	0.15	0.290	0.330	0.330	0.11	1
159	Aemilia	8.100	0.100	0.090	0.090	8.20	0.15	8.25	0.15	8.12	0.15	0.100	0.150	0.020	0.20	1
160	Una	9.050	0.004	0.050	0.040	9.00	0.15	9.08	0.15	9.08	0.15	-0.050	0.030	0.030	0.10	4
161	Athor	9.080	0.010	0.130	0.020	9.00	0.15	8.97	0.13	9.15	0.13	-0.080	-0.110	0.070	0.12	1
163	Erigone	9.480	0.010	-0.040	0.010	9.70	0.15	9.44	-0.04	9.47	-0.04	0.220	-0.040	-0.010	0.37	1
165	Loreley	7.710	0.010	0.070	0.010	7.70	0.15	7.68	0.15	7.65	0.15	-0.010	-0.030	-0.060	0.12	3
166	Rhodope	9.750	0.050	0.090	0.090	9.80	0.15	9.81	0.15	9.89	0.15	0.050	0.060	0.140	0.13	4
178	Belisana	9.600	0.006	0.310	0.009	9.40	0.15	9.35	0.15	9.38	0.15	-0.200	-0.250	-0.220	0.18	3
187	Lamberta	7.980	0.040	-0.040	0.040	8.20	0.15	8.08	0.15	8.16	0.15	0.220	0.100	0.180	0.32	4
189	Phthia	9.600	0.100	0.230	0.110	9.20	0.15	9.24	0.15	9.33	0.15	-0.400	-0.360	-0.270	0.20	3
201	Penelope	8.540	0.020	0.170	0.020	8.30	0.15	8.40	0.24	8.43	0.24	-0.240	-0.140	-0.110	0.56	1
211	Isolda	7.900	0.030	0.120	0.040	8.00	0.15	7.89	0.12	7.89	0.12	0.100	-0.010	-0.010	0.09	1
212	Medea	8.180	0.060	0.090	0.090	8.30	0.15	8.27	0.15	8.28	0.15	0.120	0.090	0.100	0.08	4
216	Kleopatra	7.350	0.020	0.280	0.030	7.10	0.15	7.17	0.29	7.30	0.29	-0.250	-0.180	-0.050	0.68	1
218	Bianca	8.607	0.005	0.310	0.008	8.60	0.32	8.60	0.32	8.60	0.32	-0.007	-0.007	-0.007	0.11	1
219	Thusnelda	9.340	0.050	0.230	0.110	9.32	0.15	9.21	0.15	9.32	0.15	-0.020	-0.130	-0.020	0.19	3
226	Weringia	9.820	0.070	0.230	0.110	9.80	0.15	9.81	0.15	9.70	0.15	-0.020	-0.010	-0.120	0.10	1
230	Athamantis	7.346	0.004	0.272	0.003	7.35	0.27	7.44	0.27	7.35	0.27	0.004	0.094	0.004	0.19	1, 3
236	Honoria	8.188	0.007	-0.020	0.014	8.20	0.15	7.97	-0.02	8.18	-0.02	0.012	-0.218	-0.008	0.17	1
258	Tyche	8.500	0.020	0.230	0.020	8.50	0.23	8.39	0.23	8.50	0.23	0.000	-0.110	0.000	0.39	1
261	Prymno	9.440	0.010	0.190	0.030	9.44	0.19	9.35	0.19	9.44	0.19	0.000	-0.090	0.000	0.17	2
266	Aline	8.490	0.070	0.090	0.090	8.80	0.15	8.61	0.15	8.80	0.15	0.310	0.120	0.310	0.07	4
279	Thule	8.520	0.180	0.150	0.200	8.57	0.15	8.35	0.15	8.57	0.15	0.050	-0.170	0.050	0.04	10
284	Amalia	10.120	0.070	0.120	0.110	10.05	0.11	10.03	0.11	10.05	0.11	-0.070	-0.090	-0.070	0.15	1
288	Glauke	10.000	0.200	0.230	0.110	9.70	0.15	9.67	0.15	9.84	0.15	-0.300	-0.330	-0.160	0.90	4
298	Baptistina	11.320	0.120	0.230	0.000	11.20	0.15	11.15	0.15	11.00	0.15	-0.120	-0.170	-0.320	0.12	12
317	Roxane	10.070	0.010	0.490	0.040	9.70	0.15	9.69	0.15	10.03	0.15	-0.370	-0.380	-0.040	0.60	3
322	Phaeo	8.990	0.060	0.090	0.090	9.00	0.15	8.99	0.15	9.01	0.15	0.010	0.000	0.020	0.07	1
325	Heidelberga	8.770	0.010	0.230	0.020	8.60	0.15	8.59	0.15	8.65	0.15	-0.170	-0.180	-0.120	0.19	3
326	Tamara	9.390	0.100	0.090	0.090	9.30	0.15	9.29	0.15	9.36	0.15	-0.090	-0.100	-0.030	0.15	3
335	Roberta	8.860	0.030	0.130	0.030	8.96	0.15	9.03	0.15	8.96	0.15	0.100	0.170	0.100	0.09	3
338	Budrosa	8.370	0.010	0.230	0.020	8.50	0.15	8.44	0.15	8.50	0.15	0.130	0.070	0.130	0.06	3
344	Desiderata	8.030	0.040	0.090	0.090	8.08	0.15	8.28	0.15	8.08	0.15	0.050	0.250	0.050	0.16	1
345	Tercidina	8.810	0.070	0.210	0.100	8.90	0.15	8.73	0.10	8.71	0.10	0.090	-0.080	-0.100	0.15	1
346	Hermentaria	7.250	0.030	0.230	0.110	7.13	0.15	7.26	0.15	7.13	0.15	-0.120	0.010	-0.120	0.08	1, 3

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
347	Pariana	8.890	0.050	0.210	0.000	8.90	0.15	8.91	0.15	8.90	0.15	0.010	0.020	0.010	0.09	12
367	Amicitia	10.690	0.140	0.230	0.000	10.70	0.15	10.48	0.15	10.70	0.15	0.010	-0.210	0.010	0.28	12
375	Ursula	7.210	0.020	0.080	0.030	7.40	0.15	7.47	0.27	7.47	0.27	0.190	0.260	0.260	0.06	4
379	Huenna	8.990	0.010	0.140	0.010	8.80	0.15	8.81	0.15	8.87	0.15	-0.190	-0.180	-0.120	0.09	3
386	Siegena	7.400	0.010	0.100	0.020	7.43	0.16	7.79	0.16	7.43	0.16	0.030	0.390	0.030	0.07	1
387	Aquitania	7.440	0.020	0.020	0.020	7.60	0.15	7.55	0.15	7.41	0.15	0.160	0.110	-0.030	0.24	3
388	Charybdis	8.580	0.040	0.070	0.100	8.60	0.15	8.50	0.07	8.57	0.07	0.020	-0.080	-0.010	0.17	1
391	Ingeborg	10.900	0.200	0.230	0.000	10.80	0.15	10.75	0.15	10.10	0.15	-0.100	-0.150	-0.800	0.22	12
392	Wilhelmina	9.590	0.010	0.090	0.090	9.70	0.15	9.66	0.15	9.70	0.15	0.110	0.070	0.110	0.11	4
419	Aurelia	8.411	0.030	0.160	0.050	8.50	0.15	8.51	0.15	8.42	0.15	0.089	0.099	0.009	0.07	1
422	Berolina	10.950	0.010	0.420	0.080	10.60	0.15	10.65	0.15	10.83	0.15	-0.350	-0.300	-0.120	0.10	1
423	Diotima	7.320	0.020	0.090	0.090	7.30	0.15	7.17	0.15	7.24	0.15	-0.020	-0.150	-0.080	0.14	4
428	Monachia	11.740	0.050	0.010	0.000	12.00	0.15	11.88	0.15	11.74	0.15	0.260	0.140	0.000	0.31	12
429	Lotis	9.890	0.020	0.070	0.030	9.90	0.15	9.91	0.15	9.82	0.15	0.010	0.020	-0.070	0.24	3
432	Pythia	8.880	0.050	0.230	0.110	8.84	0.15	8.85	0.15	8.84	0.15	-0.040	-0.030	-0.040	0.14	1
434	Hungaria	11.460	0.020	0.430	0.020	11.20	0.15	11.17	0.15	11.21	0.15	-0.260	-0.290	-0.250	0.57	4
443	Photographica	10.240	0.100	0.230	0.110	10.10	0.15	10.05	0.15	10.28	0.15	-0.140	-0.190	0.040	0.30	4
449	Hamburga	9.430	0.010	0.090	0.090	9.80	0.15	9.76	0.15	9.47	0.15	0.370	0.330	0.040	0.01	3
453	Tea	10.850	0.120	0.230	0.000	10.40	0.15	10.36	0.15	10.86	0.15	-0.450	-0.490	0.010	0.37	12
464	Megaira	9.470	0.050	0.090	0.090	9.52	0.15	9.60	0.15	9.52	0.15	0.050	0.130	0.050	0.08	1
478	Tergeste	7.960	0.050	0.230	0.110	7.90	0.15	7.96	0.15	7.98	0.15	-0.060	0.000	0.020	0.20	1
482	Petrina	8.910	0.070	0.230	0.110	8.90	0.15	8.76	0.15	8.84	0.15	-0.010	-0.150	-0.070	0.10	3
486	Cremona	10.880	0.090	0.230	0.000	11.00	0.15	11.06	0.15	10.89	0.15	0.120	0.180	0.010	0.02	12
488	Kreusa	7.800	0.100	0.090	0.090	7.90	0.15	7.86	0.15	7.81	0.15	0.100	0.060	0.010	0.20	1
505	Cava	8.640	0.020	0.010	0.010	8.70	0.15	8.50	-0.03	8.61	-0.03	0.060	-0.140	-0.030	0.24	4
510	Mabella	9.660	0.060	0.090	0.090	9.70	0.15	9.69	0.15	9.73	0.15	0.040	0.030	0.070	0.30	1
512	Taurinensis	10.720	0.040	0.240	0.040	10.70	0.15	10.70	0.15	10.68	0.15	-0.020	-0.020	-0.040	0.13	3
517	Edith	9.520	0.010	0.150	0.050	9.50	0.15	9.41	0.15	9.35	0.15	-0.020	-0.110	-0.170	0.18	3
519	Sylvania	9.180	0.020	0.230	0.040	8.90	0.15	8.87	0.15	9.14	0.15	-0.280	-0.310	-0.040	0.40	4
539	Pamina	10.040	0.100	0.090	0.090	9.70	0.15	9.96	0.15	9.70	0.15	-0.340	-0.080	-0.340	0.20	3
540	Rosamunde	10.740	0.130	0.230	0.000	10.50	0.15	10.55	0.15	10.76	0.15	-0.240	-0.190	0.020	0.53	12
542	Susanna	9.640	0.086	0.240	0.110	9.30	0.15	9.29	0.15	9.36	0.15	-0.340	-0.350	-0.280	0.10	10
556	Phyllis	9.520	0.040	0.200	0.040	9.56	0.15	9.45	0.15	9.56	0.15	0.040	-0.070	0.040	0.24	3
558	Carmen	9.170	0.030	0.210	0.060	9.00	0.15	8.99	0.15	9.09	0.15	-0.170	-0.180	-0.080	0.20	1
560	Delila	10.800	0.060	0.090	0.090	10.90	0.15	10.85	0.15	10.60	0.15	0.100	0.050	-0.200	0.10	3
584	Semiramis	8.610	0.020	0.310	0.020	8.71	0.24	8.56	0.24	8.71	0.24	0.100	-0.050	0.100	0.21	3
587	Hypsipyle	12.190	0.110	0.230	0.000	11.90	0.15	11.84	0.15	12.70	0.15	-0.290	-0.350	0.510	0.39	12
593	Titania	9.290	0.020	0.060	0.020	9.30	0.15	9.21	0.06	9.28	0.06	0.010	-0.080	-0.010	0.25	1
606	Brangane	10.200	0.100	0.090	0.090	10.20	0.15	10.21	0.15	10.38	0.15	0.000	0.010	0.180	0.18	3
622	Esther	10.240	0.150	0.230	0.110	10.20	0.15	10.20	0.15	10.17	0.15	-0.040	-0.040	-0.070	0.15	3
674	Rachele	7.472	0.030	0.239	0.050	7.42	0.15	7.34	0.15	7.42	0.15	-0.052	-0.132	-0.052	0.15	1, 3
695	Bella	9.070	0.007	0.200	0.010	9.30	0.15	8.93	0.15	9.30	0.15	0.230	-0.140	0.230	0.33	3
699	Hela	11.830	0.110	0.230	0.110	11.72	0.15	11.18	0.15	11.72	0.15	-0.110	-0.650	-0.110	0.55	4
711	Marmulla	11.750	0.150	0.230	0.000	11.70	0.15	11.69	0.15	11.90	0.15	-0.050	-0.060	0.150	0.07	12

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
712	Boliviana	8.330	0.010	0.030	0.010	8.60	0.15	8.48	0.03	8.32	0.03	0.270	0.150	-0.010	0.09	1
722	Frieda	12.310	0.070	0.230	0.000	12.30	0.15	12.29	0.15	12.10	0.15	-0.010	-0.020	-0.210	0.04	12
726	Joella	10.570	0.030	0.090	0.090	10.57	0.15	10.25	0.15	10.57	0.15	0.000	-0.320	0.000	0.12	3
728	Leonisis	13.000	0.060	0.230	0.000	12.80	0.15	12.83	0.15	12.80	0.15	-0.200	-0.170	-0.200	0.13	12
739	Mandeville	8.760	0.050	0.090	0.090	8.60	0.15	8.66	0.15	8.50	0.15	-0.160	-0.100	-0.260	0.14	1
746	Marlu	9.810	0.010	0.140	0.010	10.00	0.15	9.71	0.15	10.00	0.15	0.190	-0.100	0.190	0.23	3
770	Bali	11.110	0.020	0.160	0.000	10.90	0.15	10.89	0.15	11.11	0.15	-0.210	-0.220	0.000	0.55	12
776	Berbericia	7.632	0.008	0.140	0.010	7.68	0.34	7.79	0.34	7.68	0.34	0.048	0.158	0.048	0.21	3
779	Nina	8.100	0.020	0.260	0.040	8.30	0.15	7.87	0.15	8.30	0.15	0.200	-0.230	0.200	0.25	3
782	Montefiore	11.560	0.050	0.230	0.000	11.50	0.15	11.23	0.15	11.58	0.15	-0.060	-0.330	0.020	0.43	12
795	Fini	9.780	0.058	0.120	0.080	9.90	0.15	9.78	0.15	9.70	0.15	0.120	0.000	-0.080	0.02	10
822	Lalage	12.330	0.020	0.230	0.000	12.18	0.15	12.01	0.15	12.18	0.15	-0.150	-0.320	-0.150	0.47	12
823	Sisigambis	11.370	0.050	0.230	0.000	11.10	0.15	11.04	0.15	11.38	0.15	-0.270	-0.330	0.010	0.03	12
825	Tanina	11.840	0.060	0.230	0.000	11.40	0.15	11.38	0.15	11.86	0.15	-0.440	-0.460	0.020	0.48	12
849	Ara	8.330	0.010	0.210	0.010	8.00	0.15	8.04	0.15	8.10	0.15	-0.330	-0.290	-0.230	0.34	3
851	Zeissia	11.600	0.020	0.230	0.000	11.30	0.15	11.37	0.15	11.62	0.15	-0.300	-0.230	0.020	0.53	12
852	Wladilena	10.150	0.020	0.140	0.030	9.90	0.15	9.94	0.15	9.90	0.15	-0.250	-0.210	-0.250	0.30	4
853	Nansenia	11.690	0.060	0.090	0.000	11.50	0.15	11.38	0.15	11.69	0.15	-0.190	-0.310	0.000	0.11	12
870	Manto	11.680	0.030	0.230	0.110	11.60	0.15	11.64	0.15	13.10	0.15	-0.080	-0.040	1.420	0.30	3
901	Brunsia	11.610	0.110	0.230	0.000	11.50	0.15	11.46	0.15	11.35	0.15	-0.110	-0.150	-0.260	0.12	12
905	Universitas	11.660	0.040	0.090	0.000	11.50	0.15	11.43	0.15	11.65	0.15	-0.160	-0.230	-0.010	0.23	12
920	Rogeria	11.285	0.096	0.240	0.110	11.19	0.15	11.10	0.15	11.19	0.15	-0.095	-0.185	-0.095	0.16	10
925	Alphonsina	8.410	0.070	0.230	0.110	8.40	0.15	8.25	0.15	8.33	0.15	-0.010	-0.160	-0.080	0.16	1
929	Algunde	11.860	0.112	0.240	0.110	11.60	0.15	11.62	0.15	12.10	0.15	-0.260	-0.240	0.240	0.15	10
944	Hidalgo	10.480	0.050	-0.060	0.000	10.77	0.15	10.35	0.15	10.77	0.15	0.290	-0.130	0.290	0.48	12
945	Barcelona	10.140	0.010	0.230	0.110	10.13	0.15	9.96	0.15	10.13	0.15	-0.010	-0.180	-0.010	0.09	1
968	Petunia	10.250	0.050	0.230	0.000	10.10	0.15	10.11	0.15	10.26	0.15	-0.150	-0.140	0.010	0.07	12
980	Anacostia	7.855	0.004	0.060	0.003	7.85	0.06	7.75	0.06	7.85	0.06	-0.005	-0.105	-0.005	0.10	1
1025	Riema	12.920	0.040	0.420	0.000	12.50	0.15	12.35	0.15	12.55	0.15	-0.420	-0.570	-0.370	0.06	12
1060	Magnolia	12.710	0.060	0.230	0.000	12.70	0.15	12.60	0.15	12.70	0.15	-0.010	-0.110	-0.010	0.09	12
1065	Amundsenia	12.460	0.094	0.240	0.110	12.00	0.15	11.95	0.15	13.20	0.15	-0.460	-0.510	0.740	0.15	10
1078	Mentha	11.900	0.200	0.230	0.000	11.30	0.15	11.28	0.15	11.80	0.15	-0.600	-0.620	-0.100	0.87	12
1083	Salvia	12.250	0.110	0.230	0.000	12.10	0.15	11.97	0.15	12.60	0.15	-0.150	-0.280	0.350	0.61	12
1088	Mitaka	11.620	0.080	0.230	0.000	11.30	0.15	11.33	0.15	11.39	0.15	-0.320	-0.290	-0.230	0.40	12
1103	Sequoia	12.530	0.080	0.420	0.000	12.10	0.15	12.04	0.15	12.25	0.15	-0.430	-0.490	-0.280	0.51	12
1117	Reginita	11.690	0.100	0.230	0.000	11.70	0.15	11.75	0.15	11.90	0.15	0.010	0.060	0.210	0.13	12
1123	Shapleya	11.590	0.130	0.230	0.000	11.60	0.15	11.57	0.15	11.70	0.15	0.010	-0.020	0.110	0.28	12
1126	Otero	12.098	0.071	0.240	0.110	12.10	0.15	11.74	0.15	12.10	0.15	0.002	-0.358	0.002	0.69	10
1131	Porzia	13.100	0.140	0.230	0.000	13.00	0.15	12.87	0.15	13.00	0.15	-0.100	-0.230	-0.100	0.23	12
1153	Wallenbergia	12.310	0.080	0.230	0.000	12.00	0.15	11.99	0.15	12.10	0.15	-0.310	-0.320	-0.210	0.33	12
1177	Gonnessia	9.240	0.139	0.120	0.080	9.30	0.15	9.10	0.15	9.30	0.15	0.060	-0.140	0.060	0.10	10
1204	Renzia	12.140	0.090	0.230	0.110	12.20	0.15	11.91	0.15	12.20	0.15	0.060	-0.230	0.060	0.42	4
1235	Schorria	13.100	0.040	0.090	0.000	12.68	0.15	12.91	0.15	12.68	0.15	-0.420	-0.190	-0.420	1.40	12
1270	Datura	12.610	0.120	0.230	0.000	12.40	0.15	12.38	0.15	12.50	0.15	-0.210	-0.230	-0.110	0.41	12

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
1314	Paula	12.980	0.086	0.240	0.110	12.68	0.15	12.73	0.15	12.68	0.15	-0.300	-0.250	-0.300	0.83	10
1338	Duponta	12.798	0.064	0.200	0.030	12.30	0.15	12.52	0.15	12.30	0.15	-0.498	-0.278	-0.498	0.26	9, 10
1367	Nongoma	12.300	0.100	0.230	0.000	12.00	0.15	11.94	0.15	13.00	0.15	-0.300	-0.360	0.700	0.30	12
1374	Isora	13.670	0.150	0.230	0.000	13.30	0.15	13.13	0.15	13.50	0.15	-0.370	-0.540	-0.170	0.20	12
1376	Michelle	12.810	0.040	0.230	0.000	12.20	0.15	12.47	0.15	12.20	0.15	-0.610	-0.340	-0.610	0.19	12
1382	Gerti	12.510	0.010	0.230	0.000	12.20	0.15	11.97	0.15	12.20	0.15	-0.310	-0.540	-0.310	0.29	12
1405	Sibelius	12.570	0.078	0.240	0.110	12.50	0.15	12.48	0.15	12.30	0.15	-0.070	-0.090	-0.270	0.11	10
1419	Danzig	11.450	0.140	0.230	0.000	11.20	0.15	11.25	0.15	11.30	0.15	-0.250	-0.200	-0.150	0.92	12
1429	Pemba	12.740	0.200	0.230	0.110	12.20	0.15	12.18	0.15	12.50	0.15	-0.540	-0.560	-0.240	0.30	4
1453	Fennia	12.835	0.060	0.272	0.000	12.40	0.15	12.38	0.15	12.83	0.15	-0.435	-0.455	-0.005	0.15	9, 12
1472	Muonio	12.620	0.058	0.240	0.110	12.70	0.15	12.22	0.15	12.70	0.15	0.080	-0.400	0.080	0.34	10
1509	Esclangona	12.858	0.149	0.240	0.110	12.64	0.15	12.36	0.15	12.64	0.15	-0.218	-0.498	-0.218	0.13	10
1583	Antilochus	8.590	0.060	0.090	0.000	8.50	0.15	8.52	0.15	8.58	0.15	-0.090	-0.070	-0.010	0.07	12
1593	Fagnes	13.381	0.030	0.149	0.000	13.10	0.15	13.00	0.15	13.20	0.15	-0.281	-0.381	-0.181	0.41	3, 12
1613	Smiley	11.630	0.030	0.230	0.000	11.40	0.15	11.55	0.15	11.63	0.15	-0.230	-0.080	0.000	0.20	12
1621	Druzhba	12.370	0.090	0.230	0.000	11.70	0.15	11.70	0.15	12.39	0.15	-0.670	-0.670	0.020	0.16	12
1629	Pecker	12.360	0.103	0.240	0.110	12.30	0.15	12.34	0.15	12.60	0.15	-0.060	-0.020	0.240	0.08	10
1640	Nemo	13.580	0.130	0.230	0.000	13.10	0.15	13.00	0.15	13.10	0.15	-0.480	-0.580	-0.480	0.52	12
1644	Rafita	11.860	0.020	0.230	0.110	11.82	0.15	11.35	0.15	11.82	0.15	-0.040	-0.510	-0.040	0.31	1
1656	Suomi	13.146	0.100	0.230	0.000	12.40	0.15	12.67	0.15	13.16	0.15	-0.746	-0.476	0.014	0.10	12
1657	Roemera	12.890	0.160	0.230	0.000	12.84	0.15	12.66	0.15	12.84	0.15	-0.050	-0.230	-0.050	0.09	12
1665	Gaby	11.900	0.200	0.230	0.110	11.80	0.15	11.66	0.15	11.85	0.15	-0.100	-0.240	-0.050	0.27	3
1667	Pels	12.090	0.040	0.230	0.000	11.90	0.15	11.92	0.15	12.10	0.15	-0.190	-0.170	0.010	0.25	12
1675	Simonida	11.900	0.060	0.230	0.000	11.80	0.15	11.77	0.15	11.91	0.15	-0.100	-0.130	0.010	0.26	12
1689	Floris-Jan	11.740	0.050	0.230	0.110	11.70	0.15	11.65	0.15	11.82	0.15	-0.040	-0.090	0.080	0.40	1
1717	Arlon	12.430	0.094	0.240	0.110	12.30	0.15	12.19	0.15	12.90	0.15	-0.130	-0.240	0.470	0.08	10
1718	Namibia	13.800	0.130	0.050	0.120	13.80	0.15	13.68	0.15	13.50	0.15	0.000	-0.120	-0.300	0.16	10
1722	Goffin	12.180	0.100	0.150	0.200	12.00	0.15	12.04	0.15	12.30	0.15	-0.180	-0.140	0.120	0.60	10
1736	Floirac	12.330	0.086	0.240	0.110	12.20	0.15	12.21	0.15	12.20	0.15	-0.130	-0.120	-0.130	0.08	10
1777	Gehrels	11.773	0.030	0.343	0.000	11.60	0.15	11.43	0.15	11.10	0.15	-0.173	-0.343	-0.673	0.23	10, 12
1806	Derice	12.140	0.078	0.240	0.110	12.00	0.15	12.01	0.15	12.00	0.15	-0.140	-0.130	-0.140	0.07	10
1830	Pogson	12.659	0.054	0.291	0.050	12.80	0.15	12.76	0.15	12.45	0.15	0.141	0.101	-0.209	0.11	9
1862	Apollo	16.384	0.055	0.240	0.110	16.25	0.09	16.06	0.09	16.25	0.09	-0.134	-0.324	-0.134	0.21	10
1863	Antinous	15.639	0.058	0.119	0.020	15.54	0.15	15.33	0.15	15.54	0.15	-0.099	-0.309	-0.099	0.22	4, 10
1865	Cerberus	16.965	0.040	0.232	0.000	16.84	0.15	16.54	0.15	16.84	0.15	-0.125	-0.425	-0.125	1.55	1, 12
1866	Sisyphus	12.510	0.149	0.235	0.110	13.00	0.15	12.32	0.15	13.00	0.15	0.490	-0.190	0.490	0.08	10
1915	Quetzalcoatl	18.880	0.110	0.060	0.080	18.97	0.10	17.39	0.10	18.97	0.10	0.090	-1.490	0.090	0.20	1
1916	Boreas	14.860	0.112	0.120	0.050	14.93	0.15	14.62	0.15	14.93	0.15	0.070	-0.240	0.070	0.33	10
1943	Anteros	15.890	0.140	0.230	0.000	15.50	0.15	15.50	0.15	15.75	0.15	-0.390	-0.390	-0.140	0.07	6, 12
1951	Lick	14.350	0.200	0.180	0.000	14.70	0.15	13.89	0.15	14.51	0.15	0.350	-0.460	0.160	0.24	10, 12
1967	Menzel	12.250	0.058	0.240	0.110	12.10	0.15	12.11	0.15	12.30	0.15	-0.150	-0.140	0.050	0.24	10
1979	Sakharov	13.800	0.054	0.340	0.030	13.60	0.15	13.49	0.15	13.50	0.15	-0.200	-0.310	-0.300	0.13	10
1980	Tezcatlipoca	13.960	0.100	0.230	0.000	13.92	0.15	13.66	0.15	13.92	0.15	-0.040	-0.300	-0.040	0.72	12
1981	Midas	15.600	0.200	0.230	0.000	15.20	0.15	15.10	0.15	15.50	0.15	-0.400	-0.500	-0.100	0.87	12

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
1991	Darwin	13.600	0.070	0.230	0.000	13.40	0.15	13.34	0.15	12.90	0.15	-0.200	-0.260	-0.700	0.08	12
2002	Euler	12.700	0.103	0.240	0.110	12.30	0.15	12.35	0.15	12.10	0.15	-0.400	-0.350	-0.600	0.31	10
2006	Polonskaya	13.350	0.071	0.420	0.060	12.90	0.15	12.90	0.15	12.60	0.15	-0.450	-0.450	-0.750	0.08	10
2049	Grietje	15.600	0.200	0.420	0.000	14.80	0.15	14.70	0.15	14.90	0.15	-0.800	-0.900	-0.700	0.25	12
2063	Bacchus	17.250	0.200	0.230	0.100	17.10	0.15	17.12	0.15	17.10	0.15	-0.150	-0.130	-0.150	0.14	6
2094	Magnitka	12.490	0.206	0.400	0.200	11.90	0.15	12.08	0.15	12.00	0.15	-0.590	-0.410	-0.490	0.86	10
2100	Ra-Shalom	16.054	0.070	0.120	0.040	16.05	0.12	16.12	0.12	16.05	0.12	-0.004	0.066	-0.004	0.33	3, 6
2110	Moore-Sitterly	13.620	0.064	0.240	0.110	13.30	0.15	13.15	0.15	13.80	0.15	-0.320	-0.470	0.180	0.37	10
2121	Sevastopol	12.480	0.086	0.290	0.060	12.10	0.15	12.27	0.15	12.30	0.15	-0.380	-0.210	-0.180	0.15	10
2212	Hephaistos	13.525	0.070	0.230	0.000	13.20	0.15	13.16	0.15	13.87	0.15	-0.325	-0.365	0.345	0.08	12
2253	Espinette	13.130	0.120	0.230	0.000	12.60	0.15	12.68	0.15	12.90	0.15	-0.530	-0.450	-0.230	0.48	12
2259	Sofievka	12.480	0.071	0.120	0.080	12.40	0.15	12.49	0.15	12.60	0.15	-0.080	0.010	0.120	0.10	10
2382	Nonie	11.600	0.200	0.090	0.000	11.40	0.15	11.65	0.15	11.40	0.15	-0.200	0.050	-0.200	0.05	12
2398	Jilin	13.540	0.094	0.240	0.110	13.20	0.15	13.25	0.15	13.60	0.15	-0.340	-0.290	0.060	0.12	10
2478	Tokai	12.370	0.058	0.330	0.040	12.00	0.15	12.14	0.15	12.80	0.15	-0.370	-0.230	0.430	0.41	10
2486	Metsahovi	12.782	0.064	0.240	0.110	12.40	0.15	12.43	0.15	12.40	0.15	-0.382	-0.352	-0.382	0.11	10
2501	Lohja	12.155	0.030	0.234	0.000	11.80	0.15	11.94	0.15	12.08	0.15	-0.355	-0.215	-0.075	0.35	10, 12
2544	Gubarev	12.350	0.112	0.240	0.110	11.90	0.15	11.83	0.15	12.30	0.15	-0.450	-0.520	-0.050	0.34	10
2577	Litva	13.480	0.090	0.420	0.000	13.18	0.15	12.67	0.15	13.18	0.15	-0.300	-0.810	-0.300	0.36	12
2642	Vesale	12.450	0.100	0.230	0.000	12.50	0.15	12.46	0.15	12.70	0.15	0.050	0.010	0.250	0.39	12
2659	Millis	11.650	0.020	0.090	0.000	11.60	0.15	11.67	0.15	11.66	0.15	-0.050	0.020	0.010	0.53	12
2714	Matti	13.500	0.090	0.230	0.000	12.70	0.15	12.72	0.15	13.40	0.15	-0.800	-0.780	-0.100	0.25	12
2754	Efimov	13.920	0.054	0.290	0.020	13.50	0.15	13.45	0.15	13.50	0.15	-0.420	-0.470	-0.420	0.16	10
2794	Kulik	13.480	0.130	0.230	0.000	12.80	0.15	12.86	0.15	12.70	0.15	-0.680	-0.620	-0.780	0.22	12
2815	Soma	12.980	0.078	0.240	0.110	12.60	0.15	12.64	0.15	13.20	0.15	-0.380	-0.340	0.220	0.08	10
2830	Greenwich	12.610	0.050	0.230	0.110	12.30	0.15	12.24	0.15	12.64	0.15	-0.310	-0.370	0.030	0.05	1
2886	Tinkaping	13.280	0.100	0.230	0.000	13.20	0.15	13.01	0.15	13.20	0.15	-0.080	-0.270	-0.080	0.13	12
2897	Ole Romer	13.640	0.121	0.240	0.110	13.20	0.15	13.16	0.15	13.40	0.15	-0.440	-0.480	-0.240	0.14	10
2943	Heinrich	12.820	0.130	0.240	0.110	12.80	0.15	12.51	0.15	12.80	0.15	-0.020	-0.310	-0.020	0.20	10
2954	Delsemme	13.580	0.090	0.230	0.000	13.40	0.15	13.34	0.15	13.50	0.15	-0.180	-0.240	-0.080	0.21	12
3066	McFadden	11.240	0.080	0.230	0.000	11.10	0.15	11.09	0.15	11.20	0.15	-0.140	-0.150	-0.040	0.04	12
3073	Kursk	13.860	0.112	0.240	0.110	13.40	0.15	13.38	0.15	13.50	0.15	-0.460	-0.480	-0.360	0.21	10
3101	Goldberger	14.670	0.100	0.420	0.000	13.80	0.15	13.76	0.15	14.20	0.15	-0.870	-0.910	-0.470	0.96	12
3102	Krok	16.524	0.150	0.317	0.110	16.10	0.15	15.89	0.15	15.60	0.15	-0.424	-0.634	-0.924	1.00	3, 10
3103	Eger	15.653	0.070	0.420	0.080	15.38	0.15	15.08	0.15	15.38	0.15	-0.273	-0.573	-0.273	0.60	10
3116	Goodricke	12.620	0.070	0.230	0.000	12.40	0.15	12.39	0.15	12.50	0.15	-0.220	-0.230	-0.120	0.09	12
3121	Tamines	13.460	0.078	0.300	0.100	13.40	0.15	13.12	0.15	13.40	0.15	-0.060	-0.340	-0.060	0.04	10
3122	Florence	14.515	0.110	0.266	0.000	14.00	0.15	13.97	0.15	14.20	0.15	-0.515	-0.545	-0.315	0.17	10, 12
3200	Phaethon	14.345	0.064	0.164	0.000	14.60	0.15	14.17	0.15	14.51	0.15	0.255	-0.175	0.165	0.13	10, 12
3253	Gradie	13.590	0.060	0.230	0.000	13.10	0.15	13.10	0.15	13.40	0.15	-0.490	-0.490	-0.190	0.54	12
3255	Tholen	13.840	0.040	0.230	0.000	13.20	0.15	13.20	0.15	13.60	0.15	-0.640	-0.640	-0.240	0.08	12
3279	Solon	13.410	0.064	0.240	0.110	13.30	0.15	12.99	0.15	13.30	0.15	-0.110	-0.420	-0.110	0.85	10
3287	Olmstead	14.370	0.100	0.230	0.000	14.00	0.15	13.97	0.15	15.00	0.15	-0.370	-0.400	0.630	0.36	12
3309	Brorfelde	14.062	0.064	0.287	0.000	13.50	0.15	13.52	0.15	13.90	0.15	-0.562	-0.542	-0.162	0.14	9, 12

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
3352	McAuliffe	16.068	0.112	0.190	0.100	15.60	0.15	15.50	0.15	15.80	0.15	-0.468	-0.568	-0.268	0.20	10
3362	Khufu	18.390	0.140	0.230	0.000	18.30	0.15	18.14	0.15	18.30	0.15	-0.090	-0.250	-0.090	0.14	12
3376	Armandhammer	12.540	0.064	0.240	0.110	12.40	0.15	12.40	0.15	12.40	0.15	-0.140	-0.140	-0.140	0.04	10
3402	Wisdom	15.340	0.121	0.240	0.110	14.90	0.15	14.88	0.15	15.20	0.15	-0.440	-0.460	-0.140	0.74	10
3507	Vilas	11.560	0.040	0.420	0.000	11.30	0.15	11.37	0.15	11.30	0.15	-0.260	-0.190	-0.260	0.29	12
3553	Mera	16.650	0.139	0.240	0.110	16.40	0.15	16.35	0.15	16.50	0.15	-0.250	-0.300	-0.150	0.08	10
3554	Amun	15.870	0.070	0.260	0.000	15.60	0.15	15.53	0.15	15.87	0.15	-0.270	-0.340	0.000	0.19	12
3576	Galina	13.200	0.112	0.240	0.110	12.90	0.15	12.89	0.15	13.10	0.15	-0.300	-0.310	-0.100	0.05	10
3577	Putilin	10.600	0.100	0.090	0.000	10.30	0.15	10.50	0.15	10.40	0.15	-0.300	-0.100	-0.200	0.10	12
3581	Alvarez	12.400	0.150	0.090	0.000	12.10	0.15	12.11	0.15	12.10	0.15	-0.300	-0.290	-0.300	0.06	12
3638	Davis	11.640	0.030	0.090	0.000	11.30	0.15	11.37	0.15	11.40	0.15	-0.340	-0.270	-0.240	0.40	12
3665	Fitzgerald	13.460	0.184	0.240	0.200	12.90	0.15	12.81	0.15	12.60	0.15	-0.560	-0.650	-0.860	0.08	10
3671	Dionysus	16.670	0.080	0.210	0.030	16.50	0.15	16.33	0.15	16.30	0.15	-0.170	-0.340	-0.370	0.12	8
3673	Levy	13.140	0.078	0.280	0.080	12.80	0.15	12.78	0.15	13.00	0.15	-0.340	-0.360	-0.140	0.13	10
3691	Bede	15.220	0.100	0.430	0.080	14.50	0.15	14.49	0.15	14.90	0.15	-0.720	-0.730	-0.320	0.50	10
3752	Camillo	15.410	0.130	0.230	0.110	15.50	0.15	15.14	0.15	15.50	0.15	0.090	-0.270	0.090	1.10	6
3757	1982 XB	19.120	0.060	0.240	0.040	18.95	0.15	19.13	0.15	18.95	0.15	-0.170	0.010	-0.170	0.14	4
3824	Brendalee	13.520	0.020	0.230	0.000	13.20	0.15	13.24	0.15	13.20	0.15	-0.320	-0.280	-0.320	0.18	12
3825	Nurnberg	13.140	0.071	0.240	0.110	12.70	0.15	12.70	0.15	13.00	0.15	-0.440	-0.440	-0.140	0.71	10
3838	Epona	15.850	0.054	0.050	0.010	15.50	0.15	15.45	0.15	15.50	0.15	-0.350	-0.400	-0.350	0.05	10
3868	Mendoza	12.710	0.040	0.220	0.030	12.40	0.15	12.40	0.15	13.00	0.15	-0.310	-0.310	0.290	0.11	10
3888	Hoyt	13.260	0.130	0.240	0.110	12.70	0.15	12.55	0.15	12.90	0.15	-0.560	-0.710	-0.360	0.70	10
3896	Pordenone	11.610	0.103	0.240	0.110	11.30	0.15	11.37	0.15	11.30	0.15	-0.310	-0.240	-0.310	0.25	10
3913	Chemin	13.290	0.149	0.240	0.110	12.70	0.15	12.60	0.15	12.20	0.15	-0.590	-0.690	-1.090	0.45	10
3918	Brel	13.030	0.064	0.240	0.110	12.50	0.15	12.57	0.15	13.30	0.15	-0.530	-0.460	0.270	0.25	10
3928	Randa	13.650	0.206	0.240	0.110	13.30	0.15	13.17	0.15	13.30	0.15	-0.350	-0.480	-0.350	0.55	10
3953	Perth	14.060	0.040	0.230	0.000	13.60	0.15	13.45	0.15	13.60	0.15	-0.460	-0.610	-0.460	1.09	12
3982	Kastel'	13.350	0.080	0.510	0.130	13.20	0.15	12.80	0.15	13.20	0.15	-0.150	-0.550	-0.150	0.27	10
4029	Bridges	12.960	0.094	0.240	0.110	12.80	0.15	12.63	0.15	12.90	0.15	-0.160	-0.330	-0.060	0.21	10
4082	Swann	13.460	0.206	0.030	0.150	12.90	0.15	13.28	0.15	12.90	0.15	-0.560	-0.180	-0.560	0.67	10
4179	Toutatis	15.300	0.160	0.100	0.000	15.30	0.10	15.21	0.10	15.30	0.10	0.000	-0.090	0.000	0.07	12
4197	1982 TA	14.800	0.200	0.010	0.000	14.60	0.15	14.83	0.15	14.60	0.15	-0.200	0.030	-0.200	0.28	12
4263	Abashiri	12.930	0.094	0.240	0.110	12.60	0.15	12.62	0.15	12.60	0.15	-0.330	-0.310	-0.330	0.15	10
4285	Hulkower	12.960	0.086	0.240	0.110	12.40	0.15	12.33	0.15	12.10	0.15	-0.560	-0.630	-0.860	0.58	10
4323	Hortulus	13.570	0.094	0.240	0.110	13.60	0.15	13.34	0.15	13.60	0.15	0.030	-0.230	0.030	0.23	10
4335	Verona	13.650	0.112	0.240	0.110	13.30	0.15	13.25	0.15	13.60	0.15	-0.350	-0.400	-0.050	0.40	10
4435	Holt	13.320	0.110	0.230	0.000	13.20	0.15	13.01	0.15	13.20	0.15	-0.120	-0.310	-0.120	0.00	12
4483	Petofi	13.570	0.060	0.420	0.000	13.00	0.15	13.00	0.15	11.90	0.15	-0.570	-0.570	-1.670	0.98	12
4503	Cleobulus	16.020	0.110	0.230	0.000	15.60	0.15	15.55	0.15	15.60	0.15	-0.420	-0.470	-0.420	0.22	12
4533	Orth	13.140	0.094	0.370	0.100	12.80	0.15	12.63	0.15	12.80	0.15	-0.340	-0.510	-0.340	0.10	10
4555	1987 QL	14.280	0.112	0.300	0.100	13.70	0.15	13.73	0.15	13.70	0.15	-0.580	-0.550	-0.580	0.22	10
4558	Janesick	12.770	0.180	0.230	0.000	12.50	0.15	12.50	0.15	12.20	0.15	-0.270	-0.270	-0.570	0.11	12
4587	Rees	15.870	0.071	0.370	0.050	15.60	0.15	15.00	0.15	15.60	0.15	-0.270	-0.870	-0.270	0.78	10
4638	Estens	13.950	0.071	0.240	0.110	14.00	0.15	13.52	0.15	14.00	0.15	0.050	-0.430	0.050	0.16	10

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
4666	Dietz	13.160	0.103	0.240	0.110	12.70	0.15	12.62	0.15	13.00	0.15	-0.460	-0.540	-0.160	0.24	10
4674	Pauling	14.245	0.114	0.330	0.100	13.30	0.15	13.63	0.15	13.30	0.15	-0.945	-0.615	-0.945	0.06	10
4786	Tatianina	13.718	0.100	0.460	0.100	13.20	0.15	13.15	0.15	13.20	0.15	-0.518	-0.568	-0.518	0.19	10
4951	Iwamoto	13.740	0.060	0.190	0.050	13.20	0.15	13.19	0.15	13.40	0.15	-0.540	-0.550	-0.340	0.34	11
5080	Oja	13.010	0.064	0.240	0.110	12.60	0.15	12.58	0.15	12.90	0.15	-0.410	-0.430	-0.110	0.39	10
5129	Groom	13.060	0.103	0.160	0.090	12.60	0.15	12.52	0.15	12.40	0.15	-0.460	-0.540	-0.660	0.21	10
5143	Heracles	14.270	0.090	0.420	0.080	13.80	0.15	13.74	0.15	14.00	0.15	-0.470	-0.530	-0.270	0.10	6
5313	Nunes	13.780	0.078	0.240	0.110	13.30	0.15	13.36	0.15	12.90	0.15	-0.480	-0.420	-0.880	0.17	10
5332	Davidaguilar	14.890	0.130	0.230	0.000	14.60	0.15	14.52	0.15	13.90	0.15	-0.290	-0.370	-0.990	0.35	12
5342	Le Poole	14.120	0.094	0.240	0.110	13.50	0.15	13.49	0.15	13.90	0.15	-0.620	-0.630	-0.220	0.45	10
5407	1992 AX	14.470	0.050	0.320	0.070	13.70	0.15	13.69	0.15	13.90	0.15	-0.770	-0.780	-0.570	0.10	8
5440	Terao	13.770	0.086	0.240	0.110	13.30	0.15	13.29	0.15	13.30	0.15	-0.470	-0.480	-0.470	1.00	10
5451	Plato	14.580	0.121	0.240	0.110	14.10	0.15	13.99	0.15	14.20	0.15	-0.480	-0.590	-0.380	0.61	10
5474	Gingasen	13.280	0.112	0.240	0.110	12.90	0.15	12.85	0.15	12.60	0.15	-0.380	-0.430	-0.680	0.18	10
5477	Holmes	14.445	0.076	0.390	0.030	13.40	0.15	13.77	0.15	13.40	0.15	-1.045	-0.675	-1.045	0.10	9
5481	Kiuchi	13.676	0.062	0.430	0.080	13.10	0.15	13.11	0.15	13.00	0.15	-0.576	-0.566	-0.676	0.09	10
5484	Inoda	13.170	0.094	0.240	0.110	12.70	0.15	12.73	0.15	12.60	0.15	-0.470	-0.440	-0.570	0.16	10
5580	Sharidake	14.120	0.064	0.240	0.110	13.70	0.15	13.71	0.15	13.20	0.15	-0.420	-0.410	-0.920	0.37	10
5645	1990 SP	17.240	0.206	0.000	0.100	16.80	0.15	16.64	0.15	17.00	0.15	-0.440	-0.600	-0.240	0.72	10
5653	Camarillo	16.420	0.130	0.240	0.110	16.10	0.15	16.04	0.15	15.40	0.15	-0.320	-0.380	-1.020	0.40	10
5693	1993 EA	16.870	0.070	0.230	0.000	17.00	0.15	16.50	0.15	17.00	0.15	0.130	-0.370	0.130	0.11	12
5736	Sanford	14.170	0.177	0.240	0.110	13.60	0.15	13.57	0.15	13.40	0.15	-0.570	-0.600	-0.770	0.42	10
5751	Zao	14.940	0.180	0.230	0.000	14.60	0.15	14.50	0.15	14.80	0.15	-0.340	-0.440	-0.140	0.04	12
5783	Kumagaya	13.810	0.064	0.240	0.110	13.30	0.15	13.27	0.15	13.10	0.15	-0.510	-0.540	-0.710	0.22	10
5786	Talos	17.360	0.139	0.240	0.110	17.10	0.15	16.97	0.15	17.00	0.15	-0.260	-0.390	-0.360	0.23	10
5797	Bivoj	18.940	0.020	0.230	0.110	18.70	0.15	18.64	0.15	19.10	0.15	-0.240	-0.300	0.160	0.12	1
5836	1993 MF	15.141	0.139	0.236	0.000	14.60	0.15	14.46	0.15	13.90	0.15	-0.541	-0.681	-1.241	0.65	10, 12
5905	Johnson	14.255	0.130	0.330	0.100	14.00	0.15	13.84	0.15	13.20	0.15	-0.255	-0.415	-1.055	0.09	10
5985	1942 RJ	13.530	0.086	0.240	0.110	13.10	0.15	13.23	0.15	13.10	0.15	-0.430	-0.300	-0.430	0.14	10
5999	Plescia	14.800	0.158	0.240	0.110	14.30	0.15	14.23	0.15	14.30	0.15	-0.500	-0.570	-0.500	0.69	10
6070	Rheinland	14.170	0.054	0.310	0.030	13.60	0.15	13.68	0.15	13.60	0.15	-0.570	-0.490	-0.570	0.40	10
6084	Bascom	13.290	0.058	0.260	0.050	12.70	0.15	12.68	0.15	12.80	0.15	-0.590	-0.610	-0.490	0.22	10
6178	1986 DA	15.900	0.112	0.200	0.070	15.10	0.15	15.36	0.15	15.10	0.15	-0.800	-0.540	-0.800	0.30	10
6179	Brett	14.160	0.139	0.240	0.110	13.40	0.15	13.32	0.15	13.70	0.15	-0.760	-0.840	-0.460	0.70	10
6185	1987 YD	13.480	0.086	0.240	0.110	13.20	0.15	12.99	0.15	13.20	0.15	-0.280	-0.490	-0.280	0.33	10
6239	Minos	18.740	0.094	0.240	0.050	18.20	0.15	18.30	0.15	17.90	0.15	-0.540	-0.440	-0.840	0.08	10
6244	Okamoto	13.900	0.064	0.280	0.040	13.60	0.15	13.44	0.15	13.60	0.15	-0.300	-0.460	-0.300	0.11	10
6361	1978 VL11	13.860	0.071	0.240	0.110	13.10	0.15	13.12	0.15	12.20	0.15	-0.760	-0.740	-1.660	0.67	10
6405	Komiyama	13.430	0.112	0.240	0.110	13.10	0.15	13.00	0.15	13.20	0.15	-0.330	-0.430	-0.230	0.13	10
6453	1991 NY	13.810	0.112	0.240	0.110	13.60	0.15	13.56	0.15	13.60	0.15	-0.210	-0.250	-0.210	0.20	10
6455	1992 HE	14.215	0.112	0.340	0.100	13.90	0.15	13.71	0.15	13.80	0.15	-0.315	-0.505	-0.415	0.10	10
6456	Golombek	16.030	0.103	0.120	0.080	15.80	0.15	15.75	0.15	15.90	0.15	-0.230	-0.280	-0.130	0.13	10
6611	1993 VW	17.256	0.097	0.430	0.080	16.70	0.15	16.65	0.15	16.50	0.15	-0.556	-0.606	-0.756	0.06	10
6708	Bobbievaile	13.290	0.064	0.240	0.040	12.90	0.15	12.93	0.15	12.80	0.15	-0.390	-0.360	-0.490	0.09	10

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
6815	Mutchler	14.990	0.058	0.240	0.110	14.50	0.15	14.49	0.15	14.20	0.15	-0.490	-0.500	-0.790	0.09	10
6949	Zissell	14.000	0.121	0.240	0.110	13.50	0.15	13.42	0.15	13.10	0.15	-0.500	-0.580	-0.900	0.24	10
7020	Yourcenar	14.290	0.112	0.240	0.110	13.70	0.15	13.89	0.15	13.70	0.15	-0.590	-0.400	-0.590	0.37	10
7030	Colombini	14.480	0.094	0.240	0.110	13.90	0.15	13.62	0.15	13.90	0.15	-0.580	-0.860	-0.580	0.47	10
7033	1994 WN2	14.000	0.112	0.240	0.110	13.60	0.15	13.55	0.15	13.30	0.15	-0.400	-0.450	-0.700	0.10	10
7043	Godart	13.490	0.078	0.330	0.150	13.00	0.15	13.05	0.15	12.80	0.15	-0.490	-0.440	-0.690	0.68	10
7088	Ishtar	17.080	0.139	0.240	0.110	16.70	0.15	16.57	0.15	16.70	0.15	-0.380	-0.510	-0.380	0.11	10
7089	1992 FX1	14.050	0.086	0.240	0.110	13.50	0.15	13.41	0.15	13.70	0.15	-0.550	-0.640	-0.350	0.06	10
7116	Mentall	13.540	0.078	0.240	0.110	13.10	0.15	13.12	0.15	13.50	0.15	-0.440	-0.420	-0.040	0.11	10
7225	Huntress	13.490	0.058	0.360	0.100	13.00	0.15	12.99	0.15	13.30	0.15	-0.490	-0.500	-0.190	0.11	10
7229	Tonimoore	15.600	0.200	0.230	0.000	15.30	0.15	15.03	0.15	15.60	0.15	-0.300	-0.570	0.000	0.37	12
7267	Victormeen	13.930	0.139	0.240	0.110	13.60	0.15	13.57	0.15	13.50	0.15	-0.330	-0.360	-0.430	0.20	10
7336	Saunders	19.020	0.112	0.240	0.110	18.80	0.15	18.75	0.15	18.70	0.15	-0.220	-0.270	-0.320	0.20	10
7341	1991 VK	16.950	0.200	0.260	0.140	16.70	0.15	16.66	0.15	16.70	0.15	-0.250	-0.290	-0.250	0.49	6
7369	Gavrilin	13.610	0.158	0.200	0.150	13.10	0.15	13.06	0.15	12.90	0.15	-0.510	-0.550	-0.710	0.25	10
7480	Norwan	17.450	0.160	0.230	0.110	17.00	0.15	16.89	0.15	17.20	0.15	-0.450	-0.560	-0.250	0.50	6
7481	San Marcello	12.540	0.112	0.120	0.080	12.30	0.15	12.33	0.15	11.80	0.15	-0.240	-0.210	-0.740	0.08	10
7735	Scorzelli	13.100	0.206	0.120	0.080	12.30	0.15	12.86	0.15	12.30	0.15	-0.800	-0.240	-0.800	0.84	10
7977	1977 QQ5	15.600	0.139	0.240	0.110	15.40	0.15	15.02	0.15	15.40	0.15	-0.200	-0.580	-0.200	0.57	10
8013	Gordonmoore	17.260	0.149	0.235	0.000	16.60	0.15	16.67	0.15	16.60	0.15	-0.660	-0.590	-0.660	0.20	10, 12
8033	1992 FY1	13.640	0.071	0.240	0.110	13.20	0.15	13.16	0.15	13.40	0.15	-0.440	-0.480	-0.240	0.14	10
8034	Akka	18.148	0.110	0.230	0.000	17.90	0.15	17.79	0.15	17.90	0.15	-0.248	-0.358	-0.248	0.47	6, 12
8037	1993 HO1	16.710	0.064	0.240	0.110	16.20	0.15	16.20	0.15	16.60	0.15	-0.510	-0.510	-0.110	0.10	10
8116	Jeanperrin	14.050	0.050	0.230	0.060	13.60	0.15	13.61	0.15	13.80	0.15	-0.450	-0.440	-0.250	0.09	10
8195	1993 UC1	12.900	0.094	0.240	0.110	12.70	0.15	12.47	0.15	12.70	0.15	-0.200	-0.430	-0.200	0.33	10
8338	Ralhan	14.020	0.086	0.240	0.110	13.50	0.15	13.47	0.15	13.40	0.15	-0.520	-0.550	-0.620	0.44	10
8356	Wadhwa	13.070	0.139	0.240	0.110	12.80	0.15	12.81	0.15	12.80	0.15	-0.270	-0.260	-0.270	0.12	10
8567	1996 HW1	15.270	0.149	0.240	0.110	15.30	0.15	15.30	0.15	15.30	0.15	0.030	0.030	0.030	0.25	10
8663	1991 DJ1	14.100	0.086	0.240	0.110	13.70	0.15	13.59	0.15	14.00	0.15	-0.400	-0.510	-0.100	0.30	10
9260	Edwardolson	14.540	0.086	0.240	0.110	14.00	0.15	13.94	0.15	14.70	0.15	-0.540	-0.600	0.160	0.11	10
9556	Gaywray	13.710	0.206	0.240	0.110	13.10	0.15	13.10	0.15	13.40	0.15	-0.610	-0.610	-0.310	0.50	10
9617	Grahamchapman	14.970	0.078	0.240	0.110	14.60	0.15	14.46	0.15	14.10	0.15	-0.370	-0.510	-0.870	0.10	10
9782	Edo	13.480	0.103	0.240	0.110	13.10	0.15	13.01	0.15	13.40	0.15	-0.380	-0.470	-0.080	0.67	10
9948	1990 QB2	14.620	0.058	0.240	0.110	14.50	0.15	14.13	0.15	14.50	0.15	-0.120	-0.490	-0.120	0.74	10
9992	1997 TG19	14.970	0.094	0.240	0.110	14.40	0.15	14.38	0.15	14.40	0.15	-0.570	-0.590	-0.570	0.42	10
10123	Fideoja	14.530	0.078	0.240	0.110	14.20	0.15	14.06	0.15	13.80	0.15	-0.330	-0.470	-0.730	0.00	10
10188	Yasuoyoneda	14.030	0.121	0.240	0.110	13.60	0.15	13.56	0.15	14.20	0.15	-0.430	-0.470	0.170	0.12	10
10208	Germanicus	14.790	0.139	0.240	0.110	14.30	0.15	14.32	0.15	14.60	0.15	-0.490	-0.470	-0.190	0.13	10
10484	Hecht	14.180	0.103	0.240	0.110	13.80	0.15	13.72	0.15	13.90	0.15	-0.380	-0.460	-0.280	0.20	10
10548	1992 PJ2	14.750	0.139	0.240	0.110	14.50	0.15	14.34	0.15	14.50	0.15	-0.250	-0.410	-0.250	0.34	10
11072	Hiraoka	13.720	0.094	0.240	0.110	13.30	0.15	13.16	0.15	13.50	0.15	-0.420	-0.560	-0.220	0.26	10
11271	1988 KB	13.170	0.139	0.240	0.110	12.80	0.15	12.77	0.15	13.60	0.15	-0.370	-0.400	0.430	0.35	10
11398	1998 YP11	16.590	0.058	0.290	0.020	16.40	0.15	16.38	0.15	16.30	0.15	-0.190	-0.210	-0.290	0.25	10
11500	Tomaiyowit	18.490	0.112	0.190	0.050	18.40	0.15	18.27	0.15	18.40	0.15	-0.090	-0.220	-0.090	0.50	10

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
11756	Geneparker	15.020	0.078	0.240	0.110	14.60	0.15	14.58	0.15	15.10	0.15	-0.420	-0.440	0.080	0.14	10
12466	1997 AS12	14.210	0.094	0.240	0.110	13.80	0.15	13.70	0.15	13.70	0.15	-0.410	-0.510	-0.510	0.06	10
12711	Tukmit	16.240	0.078	0.250	0.050	15.80	0.15	15.69	0.15	16.00	0.15	-0.440	-0.550	-0.240	0.70	10
12923	Zephyr	15.930	0.078	0.240	0.110	15.70	0.15	15.68	0.15	16.10	0.15	-0.230	-0.250	0.170	0.18	10
13144	1995 BJ	13.400	0.112	0.120	0.080	13.10	0.15	13.15	0.15	13.30	0.15	-0.300	-0.250	-0.100	0.19	10
13154	Petermrva	14.600	0.058	0.200	0.100	14.10	0.15	14.07	0.15	14.20	0.15	-0.500	-0.530	-0.400	0.14	10
13166	1995 WU1	12.950	0.094	0.240	0.110	12.30	0.15	12.45	0.15	12.30	0.15	-0.650	-0.500	-0.650	0.22	10
13553	1992 JE	16.710	0.130	0.240	0.110	16.00	0.15	16.29	0.15	16.00	0.15	-0.710	-0.420	-0.710	1.10	10
13651	1997 BR	18.050	0.150	0.080	0.090	17.60	0.15	17.56	0.15	17.60	0.15	-0.450	-0.490	-0.450	1.20	6
14211	1999 NT1	14.220	0.149	0.240	0.110	13.70	0.15	13.68	0.15	13.70	0.15	-0.520	-0.540	-0.520	0.12	10
14402	1991 DB	19.040	0.054	0.260	0.030	18.40	0.15	18.53	0.15	18.40	0.15	-0.640	-0.510	-0.640	0.11	10
15350	Naganuma	14.160	0.103	0.240	0.110	13.90	0.15	13.94	0.15	13.90	0.15	-0.260	-0.220	-0.260	0.07	10
15533	2000 AP138	14.180	0.103	0.240	0.110	13.60	0.15	13.59	0.15	13.60	0.15	-0.580	-0.590	-0.580	0.38	10
15700	1987 QD	14.990	0.086	0.240	0.110	14.40	0.15	14.43	0.15	14.40	0.15	-0.590	-0.560	-0.590	0.07	10
15702	Olegkotov	13.210	0.064	0.120	0.080	12.90	0.15	12.91	0.15	13.50	0.15	-0.310	-0.300	0.290	0.05	10
15793	1993 TG19	15.460	0.206	0.240	0.110	14.70	0.15	14.73	0.15	15.10	0.15	-0.760	-0.730	-0.360	0.71	10
16064	1999 RH27	16.560	0.064	-0.140	0.020	16.80	0.15	16.66	0.15	16.90	0.15	0.240	0.100	0.340	0.70	10
16115	1999 XH25	13.280	0.094	0.120	0.080	13.00	0.15	12.97	0.15	13.30	0.15	-0.280	-0.310	0.020	0.26	10
16173	2000 AC98	14.430	0.058	0.270	0.050	14.00	0.15	13.90	0.15	13.80	0.15	-0.430	-0.530	-0.630	0.36	10
16403	1984 WJ1	13.740	0.064	0.370	0.050	12.70	0.15	13.30	0.15	12.70	0.15	-1.040	-0.440	-1.040	0.14	10
16691	1994 VS	15.010	0.206	0.240	0.110	14.50	0.15	14.40	0.15	15.00	0.15	-0.510	-0.610	-0.010	0.25	10
17060	Mikecombi	14.020	0.130	0.240	0.110	13.40	0.15	13.38	0.15	13.60	0.15	-0.620	-0.640	-0.420	0.33	10
17260	2000 JQ58	14.580	0.112	0.160	0.120	14.20	0.15	14.16	0.15	14.00	0.15	-0.380	-0.420	-0.580	0.15	9
17470	1991 BX	13.280	0.112	0.120	0.080	13.10	0.15	12.99	0.15	12.60	0.15	-0.180	-0.290	-0.680	0.68	10
17479	1991 PV9	13.640	0.071	0.240	0.110	13.20	0.15	13.13	0.15	13.20	0.15	-0.440	-0.510	-0.440	0.31	10
17938	Tamsendrew	14.870	0.121	0.240	0.110	14.40	0.15	14.38	0.15	14.80	0.15	-0.470	-0.490	-0.070	0.17	10
18096	2000 LM16	13.960	0.206	0.120	0.080	13.70	0.15	13.58	0.15	13.80	0.15	-0.260	-0.380	-0.160	0.18	10
18109	2000 NG11	17.180	0.206	0.040	0.100	17.50	0.15	16.91	0.15	17.50	0.15	0.320	-0.270	0.320	1.13	10
18503	1996 PY4	14.510	0.158	0.240	0.110	13.90	0.15	13.85	0.15	14.80	0.15	-0.610	-0.660	0.290	0.25	10
19763	Klimesh	13.270	0.130	0.240	0.110	12.80	0.15	12.72	0.15	13.20	0.15	-0.470	-0.550	-0.070	0.67	10
19764	2000 NF5	16.280	0.078	0.300	0.100	15.90	0.15	15.81	0.15	16.00	0.15	-0.380	-0.470	-0.280	0.80	10
20031	1992 OO	13.850	0.121	0.240	0.110	13.20	0.15	13.12	0.15	12.90	0.15	-0.650	-0.730	-0.950	0.39	10
20236	1998 BZ7	17.930	0.149	0.240	0.110	17.60	0.15	17.56	0.15	17.60	0.15	-0.330	-0.370	-0.330	0.17	10
20255	1998 FX2	18.370	0.110	0.240	0.110	18.20	0.15	18.27	0.15	18.20	0.15	-0.170	-0.100	-0.170	0.17	10
20429	1998 YN1	17.980	0.121	0.240	0.110	17.60	0.15	17.29	0.15	18.00	0.15	-0.380	-0.690	0.020	0.15	10
20691	1999 VY72	13.690	0.112	0.240	0.110	13.20	0.15	13.15	0.15	13.20	0.15	-0.490	-0.540	-0.490	0.13	10
20932	2258 T-1	13.780	0.078	0.240	0.110	13.30	0.15	13.24	0.15	13.20	0.15	-0.480	-0.540	-0.580	0.17	10
21028	1989 TO	13.290	0.158	0.240	0.110	13.60	0.15	13.07	0.15	13.60	0.15	0.310	-0.220	0.310	0.12	10
21088	1992 BL2	14.350	0.149	0.240	0.110	14.20	0.15	14.14	0.15	14.40	0.15	-0.150	-0.210	0.050	0.13	10
21720	Pilishvili	15.140	0.071	0.240	0.110	14.70	0.15	14.69	0.15	15.30	0.15	-0.440	-0.450	0.160	0.14	10
22166	2000 WX154	15.020	0.103	0.240	0.110	14.40	0.15	14.13	0.15	14.60	0.15	-0.620	-0.890	-0.420	0.46	10
23809	Haswell	14.970	0.064	0.240	0.110	14.40	0.15	14.32	0.15	15.00	0.15	-0.570	-0.650	0.030	0.16	10
23971	1998 YU9	14.570	0.086	0.120	0.080	13.70	0.15	13.53	0.15	13.60	0.15	-0.870	-1.040	-0.970	0.79	10
23979	1999 JL82	13.900	0.078	0.240	0.110	13.50	0.15	13.27	0.15	13.50	0.15	-0.400	-0.630	-0.400	0.17	10

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
24114	1999 VV23	13.520	0.130	0.240	0.110	13.10	0.15	13.21	0.15	13.10	0.15	-0.420	-0.310	-0.420	0.26	10
24891	1997 AT2	15.690	0.071	0.240	0.110	15.20	0.15	15.14	0.15	15.00	0.15	-0.490	-0.550	-0.690	0.96	10
25330	1999 KV4	16.730	0.146	0.120	0.080	16.60	0.15	16.48	0.15	16.80	0.15	-0.130	-0.250	0.070	0.15	10
25355	1999 RU221	15.590	0.103	0.240	0.110	14.80	0.15	14.88	0.15	15.20	0.15	-0.790	-0.710	-0.390	0.79	10
25458	1999 XT13	14.770	0.112	0.240	0.110	14.20	0.15	14.19	0.15	13.90	0.15	-0.570	-0.580	-0.870	0.30	10
25719	2000 AV171	14.190	0.112	0.120	0.080	13.60	0.15	13.62	0.15	13.80	0.15	-0.590	-0.570	-0.390	0.82	10
26045	1582 T-2	15.840	0.112	0.240	0.110	15.50	0.15	15.44	0.15	15.80	0.15	-0.340	-0.400	-0.040	0.10	10
26760	2001 KP41	15.580	0.112	0.050	0.050	15.30	0.15	15.27	0.15	15.50	0.15	-0.280	-0.310	-0.080	0.31	10
26879	Haines	14.580	0.103	0.240	0.110	14.20	0.15	13.99	0.15	14.40	0.15	-0.380	-0.590	-0.180	0.07	10
27695	1981 EW36	15.150	0.078	0.120	0.080	15.00	0.15	14.86	0.15	15.10	0.15	-0.150	-0.290	-0.050	0.15	10
28017	1997 YV13	13.910	0.094	0.240	0.110	13.20	0.15	13.46	0.15	13.20	0.15	-0.710	-0.450	-0.710	0.15	10
29168	1990 KJ	13.840	0.130	0.240	0.110	13.30	0.15	13.27	0.15	13.40	0.15	-0.540	-0.570	-0.440	0.14	10
29292	Conniewalker	13.590	0.112	0.240	0.110	13.40	0.15	13.34	0.15	13.40	0.15	-0.190	-0.250	-0.190	0.63	10
30825	1990 TG1	14.920	0.139	0.240	0.110	14.80	0.15	14.64	0.15	14.70	0.15	-0.120	-0.280	-0.220	0.11	10
31345	1998 PG	17.640	0.140	0.230	0.110	17.30	0.15	17.12	0.15	17.30	0.15	-0.340	-0.520	-0.340	0.11	7
31650	Frydek-Mistek	14.230	0.112	0.120	0.080	13.80	0.15	13.78	0.15	13.90	0.15	-0.430	-0.450	-0.330	0.19	10
32008	2000 HM53	14.730	0.103	0.240	0.110	14.30	0.15	14.25	0.15	14.10	0.15	-0.430	-0.480	-0.630	0.19	10
32039	2000 JO23	14.870	0.058	0.250	0.030	14.40	0.15	14.41	0.15	14.80	0.15	-0.470	-0.460	-0.070	0.05	10
32910	1994 TE15	15.340	0.086	0.300	0.100	14.50	0.15	14.79	0.15	14.50	0.15	-0.840	-0.550	-0.840	0.16	10
32953	1996 GF19	15.030	0.064	0.240	0.110	14.70	0.15	14.57	0.15	14.70	0.15	-0.330	-0.460	-0.330	0.07	10
33788	1999 RL240	13.180	0.206	0.120	0.080	12.80	0.15	12.80	0.15	13.10	0.15	-0.380	-0.380	-0.080	0.44	10
34442	2000 SS64	14.540	0.064	0.120	0.080	14.30	0.15	14.19	0.15	14.00	0.15	-0.240	-0.350	-0.540	0.83	10
34706	2001 OP83	15.070	0.139	0.240	0.110	14.70	0.15	14.74	0.15	14.70	0.15	-0.370	-0.330	-0.370	0.13	10
35107	1991 VH	16.980	0.050	0.280	0.030	16.90	0.15	16.69	0.15	16.90	0.15	-0.080	-0.290	-0.080	0.08	8
35389	1997 XO	14.690	0.112	0.120	0.080	14.40	0.15	14.29	0.15	14.30	0.15	-0.290	-0.400	-0.390	0.18	10
35396	1997 XF11	16.770	0.080	0.060	0.040	16.90	0.15	16.70	0.15	16.90	0.15	0.130	-0.070	0.130	0.73	10
35430	1998 BT6	15.690	0.086	0.240	0.110	15.20	0.15	15.09	0.15	15.50	0.15	-0.490	-0.600	-0.190	0.82	10
36368	2000 OG12	15.510	0.112	0.240	0.110	15.00	0.15	15.01	0.15	15.30	0.15	-0.510	-0.500	-0.210	0.00	10
36492	2000 QW46	15.045	0.164	0.240	0.110	14.50	0.15	14.37	0.15	14.50	0.15	-0.545	-0.675	-0.545	0.00	10
37655	Illapa	18.010	0.158	0.240	0.110	17.90	0.15	17.75	0.15	17.70	0.15	-0.110	-0.260	-0.310	0.11	10
38995	2000 UJ24	14.770	0.112	0.120	0.080	14.50	0.15	14.43	0.15	14.40	0.15	-0.270	-0.340	-0.370	0.31	10
39076	2000 VL22	15.205	0.141	0.120	0.080	14.70	0.15	14.69	0.15	14.70	0.15	-0.505	-0.515	-0.505	0.35	10
39783	1997 LB1	14.020	0.112	0.120	0.080	13.70	0.15	13.64	0.15	13.70	0.15	-0.320	-0.380	-0.320	0.36	10
40267	1999 GJ4	16.080	0.206	0.500	0.200	15.40	0.15	15.28	0.15	15.25	0.15	-0.680	-0.800	-0.830	1.01	10
42314	2001 VQ121	14.660	0.206	0.120	0.080	14.30	0.15	14.08	0.15	14.30	0.15	-0.360	-0.580	-0.360	1.00	10
43183	1999 XK213	14.340	0.112	0.120	0.080	14.00	0.15	14.02	0.15	14.00	0.15	-0.340	-0.320	-0.340	0.46	10
45810	2000 QP32	15.320	0.112	0.240	0.110	14.90	0.15	14.72	0.15	14.90	0.15	-0.420	-0.600	-0.420	0.16	10
46824	1998 MT38	15.900	0.112	0.240	0.110	15.40	0.15	15.17	0.15	15.40	0.15	-0.500	-0.730	-0.500	0.00	10
50822	2000 FH35	14.620	0.058	0.120	0.080	14.30	0.15	14.21	0.15	14.30	0.15	-0.320	-0.410	-0.320	0.08	10
51911	2001 QD68	13.520	0.078	0.120	0.080	13.10	0.15	13.06	0.15	13.10	0.15	-0.420	-0.460	-0.420	0.32	10
52762	1998 MT24	14.690	0.206	0.000	0.200	14.70	0.15	14.61	0.15	14.60	0.15	0.010	-0.080	-0.090	0.40	10
53435	1999 VM40	14.910	0.078	0.200	0.040	14.60	0.15	14.48	0.15	14.52	0.15	-0.310	-0.430	-0.390	0.25	10
58207	1992 EF14	16.500	0.112	0.120	0.080	15.80	0.15	15.76	0.15	15.80	0.15	-0.700	-0.740	-0.700	0.28	10
61263	2000 OR28	15.460	0.112	0.240	0.110	14.80	0.15	14.83	0.15	14.80	0.15	-0.660	-0.630	-0.660	0.30	10

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
62112	2000 RM99	13.880	0.094	0.120	0.080	13.70	0.15	13.46	0.15	13.70	0.15	-0.180	-0.420	-0.180	0.73	10
63634	2001 QU86	15.170	0.094	0.240	0.110	15.30	0.15	14.58	0.15	15.30	0.15	0.130	-0.590	0.130	0.63	10
64588	2001 XX3	14.230	0.139	0.240	0.110	13.70	0.15	13.65	0.15	13.70	0.15	-0.530	-0.580	-0.530	0.83	10
65803	Didymos	18.160	0.030	0.200	0.020	18.00	0.15	17.95	0.15	17.95	0.15	-0.160	-0.210	-0.210	0.08	8
66063	1998 RO1	18.050	0.071	0.120	0.050	18.10	0.15	17.95	0.15	17.95	0.15	0.050	-0.100	-0.100	0.13	8
66335	1999 JZ61	13.900	0.086	0.240	0.110	13.50	0.15	13.37	0.15	13.50	0.15	-0.400	-0.530	-0.400	0.47	10
67751	2000 UF48	14.805	0.122	0.180	0.100	14.40	0.15	14.46	0.15	14.40	0.15	-0.405	-0.345	-0.405	0.36	10
68905	2002 JZ104	15.860	0.139	0.240	0.110	15.50	0.15	15.31	0.15	15.50	0.15	-0.360	-0.550	-0.360	0.14	10
69230	Hermes	17.570	0.120	0.150	0.200	17.50	0.15	17.48	0.15	17.48	0.15	-0.070	-0.090	-0.090	0.06	8
71200	1999 XT236	14.885	0.122	0.120	0.080	14.60	0.15	14.54	0.15	14.60	0.15	-0.285	-0.345	-0.285	0.00	10
73371	2002 KA13	15.690	0.112	0.120	0.080	15.80	0.15	15.36	0.15	15.80	0.15	0.110	-0.330	0.110	0.27	10
74355	1998 WJ12	14.760	0.112	0.240	0.110	14.40	0.15	14.25	0.15	14.40	0.15	-0.360	-0.510	-0.360	0.15	10
76818	2000 RG79	14.260	0.090	0.450	0.100	13.50	0.15	13.44	0.15	13.43	0.15	-0.760	-0.820	-0.830	0.14	10
85938	1999 DJ4	18.600	0.206	0.060	0.100	18.60	0.15	18.48	0.15	18.49	0.15	0.000	-0.120	-0.110	0.11	8
87426	2000 QH101	15.285	0.104	0.180	0.100	15.10	0.15	14.94	0.15	15.60	0.15	-0.185	-0.345	0.315	0.14	10
88188	2000 XH44	16.530	0.206	0.350	0.200	16.00	0.15	15.95	0.15	15.90	0.15	-0.530	-0.580	-0.630	0.06	10
88710	2001 SL9	18.070	0.078	0.460	0.130	17.60	0.15	17.44	0.15	17.43	0.15	-0.470	-0.630	-0.640	0.08	8
88850	2001 SL222	15.630	0.071	0.120	0.080	15.90	0.15	15.27	0.15	15.90	0.15	0.270	-0.360	0.270	0.22	10
89136	2001 US16	20.290	0.112	0.300	0.100	20.20	0.15	20.17	0.15	20.18	0.15	-0.090	-0.120	-0.110	0.90	10
89355	2001 VS78	15.740	0.206	0.100	0.100	15.60	0.15	15.47	0.15	15.45	0.15	-0.140	-0.270	-0.290	0.50	10
91810	1999 TQ249	14.770	0.206	0.120	0.080	14.40	0.15	14.39	0.15	15.30	0.15	-0.370	-0.380	0.530	0.20	10
93195	2000 SV112	15.935	0.141	0.180	0.100	15.60	0.15	15.67	0.15	16.30	0.15	-0.335	-0.265	0.365	0.52	10
95868	2003 GB29	14.460	0.206	0.120	0.080	14.20	0.15	14.17	0.15	14.20	0.15	-0.260	-0.290	-0.260	0.74	10
98015	2000 QS215	16.820	0.112	0.240	0.110	16.60	0.15	16.06	0.15	16.80	0.15	-0.220	-0.760	-0.020	0.77	10
99475	2002 CR118	15.120	0.206	0.240	0.110	14.40	0.15	14.29	0.15	14.80	0.15	-0.720	-0.830	-0.320	0.74	10
99907	1989 VA	18.000	0.200	0.230	0.000	17.90	0.15	17.81	0.15	17.78	0.15	-0.100	-0.190	-0.220	0.15	12
100111	1993 FA51	15.040	0.112	0.120	0.080	14.80	0.15	14.77	0.15	14.80	0.15	-0.240	-0.270	-0.240	0.00	10
101610	1999 CW7	16.510	0.110	0.240	0.110	16.10	0.15	15.98	0.15	16.10	0.15	-0.410	-0.530	-0.410	0.38	10
103067	1999 XA143	16.990	0.149	0.240	0.110	16.60	0.15	16.56	0.15	16.51	0.15	-0.390	-0.430	-0.480	0.49	10
105612	2000 RT99	14.450	0.071	0.240	0.110	14.10	0.15	13.98	0.15	14.40	0.15	-0.350	-0.470	-0.050	0.00	10
113846	2002 TV239	16.930	0.112	0.240	0.110	16.40	0.15	16.28	0.15	16.10	0.15	-0.530	-0.650	-0.830	0.20	10
114205	2002 VF105	15.910	0.206	0.240	0.110	15.20	0.15	15.20	0.15	15.20	0.15	-0.710	-0.710	-0.710	0.90	10
114319	2002 XD58	15.940	0.121	0.240	0.110	15.60	0.15	15.44	0.15	15.60	0.15	-0.340	-0.500	-0.340	0.14	10
119409	2001 TH72	15.860	0.112	0.240	0.110	15.60	0.15	15.59	0.15	16.10	0.15	-0.260	-0.270	0.240	1.28	10
125922	2001 XR234	15.630	0.206	0.120	0.080	15.50	0.15	15.62	0.15	15.80	0.15	-0.130	-0.010	0.170	0.71	10
126267	2002 AN86	16.100	0.121	0.240	0.110	15.50	0.15	15.58	0.15	15.60	0.15	-0.600	-0.520	-0.500	0.00	10
131739	2001 YJ115	16.600	0.206	0.240	0.110	16.20	0.15	15.93	0.15	16.30	0.15	-0.400	-0.670	-0.300	0.00	10
138971	2001 CB21	18.710	0.160	0.240	0.110	18.40	0.15	18.36	0.15	18.41	0.15	-0.310	-0.350	-0.300	0.19	10
139345	2001 KA67	17.060	0.168	0.240	0.110	16.70	0.15	16.66	0.15	16.74	0.15	-0.360	-0.400	-0.320	0.20	10
144411	2004 EW9	16.620	0.168	0.240	0.110	16.60	0.15	16.55	0.15	16.55	0.15	-0.020	-0.070	-0.070	0.90	10
151803	2003 FE58	16.690	0.206	0.240	0.110	16.40	0.15	16.41	0.15	16.40	0.15	-0.290	-0.280	-0.290	0.00	10
153002	2000 JG5	18.580	0.168	0.240	0.110	18.10	0.15	17.97	0.15	18.02	0.15	-0.480	-0.610	-0.560	0.85	10
159669	2002 GY73	15.530	0.058	0.120	0.080	15.30	0.15	15.29	0.15	15.50	0.15	-0.230	-0.240	-0.030	0.27	10
162210	1999 SM5	19.360	0.112	0.200	0.070	19.10	0.15	19.08	0.15	19.10	0.15	-0.260	-0.280	-0.260	0.77	10

Table 2: *cont.*

Asteroid		H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
162635	2000 SS164	16.980	0.177	0.240	0.110	16.40	0.15	16.40	0.15	16.36	0.15	-0.580	-0.580	-0.620	0.86	10
163373	2002 PZ39	19.100	0.112	0.240	0.110	18.90	0.15	18.79	0.15	18.79	0.15	-0.200	-0.310	-0.310	0.10	10
167208	Lelekovice	16.985	0.141	0.120	0.080	16.20	0.15	16.69	0.15	16.20	0.15	-0.785	-0.295	-0.785	0.25	10
168318	1989 DA	19.080	0.100	0.230	0.000	18.90	0.15	18.84	0.15	18.83	0.15	-0.180	-0.240	-0.250	0.12	12
175706	1996 FG3	17.760	0.030	-0.070	0.020	18.20	0.15	18.38	0.15	18.00	0.15	0.440	0.620	0.240	0.08	7
176505	2001 YF29	16.210	0.112	0.240	0.110	16.00	0.15	15.89	0.15	16.00	0.15	-0.210	-0.320	-0.210	0.56	10
183532	2003 GC27	15.440	0.112	0.120	0.080	15.00	0.15	15.07	0.15	15.00	0.15	-0.440	-0.370	-0.440	0.84	10
185851	2000 DP107	18.020	0.200	0.000	0.100	18.20	0.15	18.15	0.15	18.15	0.15	0.180	0.130	0.130	0.18	8
188228	2002 TH267	16.690	0.206	0.150	0.200	16.30	0.15	16.39	0.15	16.30	0.15	-0.390	-0.300	-0.390	0.20	10
190978	2001 XD101	15.990	0.112	0.240	0.110	15.50	0.15	15.46	0.15	15.20	0.15	-0.490	-0.530	-0.790	0.58	10
196698	2003 SV77	15.930	0.112	0.120	0.080	15.70	0.15	15.61	0.15	15.70	0.15	-0.230	-0.320	-0.230	0.27	10
205744	2002 BK25	18.330	0.112	0.240	0.110	18.10	0.15	18.01	0.15	18.07	0.15	-0.230	-0.320	-0.260	0.00	10
206079	2002 RU66	15.120	0.112	0.120	0.080	14.90	0.15	14.81	0.15	14.90	0.15	-0.220	-0.310	-0.220	0.00	10
206400	2003 SW52	17.020	0.112	0.240	0.110	16.50	0.15	16.42	0.15	16.50	0.15	-0.520	-0.600	-0.520	0.37	10
210999	2001 XR49	15.390	0.058	0.120	0.080	15.40	0.15	15.19	0.15	15.40	0.15	0.010	-0.200	0.010	0.00	10
211349	2002 TB120	15.970	0.112	0.240	0.110	15.40	0.15	15.29	0.15	15.40	0.15	-0.570	-0.680	-0.570	0.73	10
213665	2002 SS50	16.220	0.086	0.120	0.080	16.20	0.15	15.68	0.15	16.20	0.15	-0.020	-0.540	-0.020	0.18	10
217628	Lugh	16.830	0.110	0.230	0.000	16.30	0.15	16.24	0.15	16.20	0.15	-0.530	-0.590	-0.630	0.08	12
219525	2001 QG97	16.410	0.112	0.240	0.110	15.90	0.15	15.94	0.15	15.60	0.15	-0.510	-0.470	-0.810	0.18	10
232067	2001 UR220	15.340	0.078	0.120	0.080	15.60	0.15	15.06	0.15	15.60	0.15	0.260	-0.280	0.260	0.29	10
237442	1999 TA10	18.470	0.094	0.240	0.110	18.00	0.15	18.04	0.15	17.90	0.15	-0.470	-0.430	-0.570	0.10	10
250365	2003 SJ307	16.710	0.112	0.240	0.110	15.90	0.15	15.72	0.15	15.90	0.15	-0.810	-0.990	-0.810	0.47	10
250719	2005 SN21	15.530	0.206	0.120	0.080	15.50	0.15	15.20	0.15	15.50	0.15	-0.030	-0.330	-0.030	0.82	10
252591	2001 XO1	16.090	0.064	0.120	0.080	15.90	0.15	15.77	0.15	15.90	0.15	-0.190	-0.320	-0.190	0.30	10
254070	2004 HK42	16.115	0.104	0.180	0.100	15.60	0.15	15.59	0.15	15.60	0.15	-0.515	-0.525	-0.515	0.22	10
257838	2000 JQ66	18.250	0.094	0.430	0.080	17.70	0.15	17.70	0.15	17.58	0.15	-0.550	-0.550	-0.670	0.60	10
267494	2002 JB9	16.320	0.158	0.240	0.110	16.00	0.15	15.82	0.15	15.68	0.15	-0.320	-0.500	-0.640	0.21	10
267729	2003 FC5	18.610	0.177	0.240	0.110	18.20	0.15	18.25	0.15	18.25	0.15	-0.410	-0.360	-0.360	0.50	10
282631	2005 SV1	15.630	0.112	0.120	0.080	15.60	0.15	15.35	0.15	15.60	0.15	-0.030	-0.280	-0.030	0.31	10
293743	2007 RL45	17.090	0.206	0.240	0.110	16.80	0.15	16.61	0.15	16.80	0.15	-0.290	-0.480	-0.290	0.00	10
301844	1990 UA	19.710	0.080	0.230	0.000	19.70	0.15	19.62	0.15	19.61	0.15	-0.010	-0.090	-0.100	0.10	12
	1989 VB	19.940	0.120	0.230	0.000	19.90	0.15	19.90	0.15	19.92	0.15	-0.040	-0.040	-0.020	0.32	12
	1990 UP	20.450	0.100	0.230	0.000	21.30	0.15	21.27	0.15	21.16	0.15	0.850	0.820	0.710	0.80	12
	1994 AW1	17.400	0.200	0.150	0.200	17.50	0.15	17.42	0.15	17.33	0.15	0.100	0.020	-0.070	0.12	8
	1994 CB	21.400	0.200	0.150	0.200	21.00	0.15	21.02	0.15	21.02	0.15	-0.400	-0.380	-0.380	0.90	5
	1998 QR15	18.450	0.158	0.240	0.110	18.10	0.15	18.02	0.15	17.93	0.15	-0.350	-0.430	-0.520	0.11	10
	1998 QR52	19.070	0.103	0.240	0.110	18.70	0.15	18.70	0.15	18.68	0.15	-0.370	-0.370	-0.390	0.88	10
	1999 JO8	17.100	0.168	0.240	0.110	16.90	0.15	16.94	0.09	16.97	0.15	-0.200	-0.160	-0.130	0.09	10
	1999 PJ1	18.410	0.130	0.240	0.110	18.00	0.15	17.96	0.15	18.06	0.15	-0.410	-0.450	-0.350	1.10	10
	2000 QN130	18.230	0.206	-0.150	0.200	18.10	0.15	17.92	0.15	17.83	0.15	-0.130	-0.310	-0.400	0.30	10
	2000 UG11	20.970	0.100	0.320	0.100	20.40	0.15	20.32	0.15	20.30	0.15	-0.570	-0.650	-0.670	0.10	8
	2000 WL107	24.440	0.200	0.150	0.200	24.80	0.15	24.64	0.15	24.33	0.15	0.360	0.200	-0.110	1.10	10
	2001 TX16	14.160	0.117	0.120	0.080	14.00	0.15	13.97	0.15	14.10	0.15	-0.160	-0.190	-0.060	0.47	10
	2002 FD6	22.510	0.149	0.240	0.110	22.30	0.15	22.25	0.15	22.26	0.15	-0.210	-0.260	-0.250	0.20	10

Table 2: *cont.*

Asteroid	H	δH	G	δG	H_{MPC}	G_{MPC}	H_{AsD}	G_{AsD}	H_{JPL}	G_{JPL}	$H_{\mathrm{MPC}} - H$	$H_{\mathrm{AsD}} - H$	$H_{\mathrm{JPL}} - H$	Ampl.	Reference(s)
2002 NY40	19.230	0.200	0.150	0.200	19.00	0.15	18.96	0.15	19.19	0.15	-0.230	-0.270	-0.040	1.30	10
2002 TD60	19.900	0.094	0.550	0.100	19.30	0.15	19.22	0.15	19.21	0.15	-0.600	-0.680	-0.690	1.60	10
2003 AJ73	18.930	0.103	0.240	0.110	18.60	0.15	18.48	0.15	18.48	0.15	-0.330	-0.450	-0.450	0.96	10
2003 AK18	19.880	0.130	0.240	0.110	19.70	0.15	19.64	0.15	19.64	0.15	-0.180	-0.240	-0.240	0.19	10
2003 FG	19.570	0.112	0.240	0.110	19.70	0.15	19.72	0.15	19.72	0.15	0.130	0.150	0.150	1.40	10
2003 SR84	25.440	0.149	0.240	0.110	26.00	0.15	25.86	0.15	25.85	0.15	0.560	0.420	0.410	0.83	10
2004 JR1	17.620	0.158	0.120	0.080	17.60	0.15	17.55	0.15	17.55	0.15	-0.020	-0.070	-0.070	0.13	10
2004 XO14	16.330	0.054	0.160	0.020	16.10	0.15	16.10	0.15	16.10	0.15	-0.230	-0.230	-0.230	0.21	10
2005 AB	17.390	0.058	-0.010	0.010	17.50	0.15	17.49	0.15	17.48	0.15	0.110	0.100	0.090	0.07	10
2005 SQ73	18.160	0.094	0.240	0.110	17.40	0.15	17.40	0.15	17.40	0.15	-0.760	-0.760	-0.760	0.30	10
2005 TQ27	15.690	0.206	0.120	0.080	15.40	0.15	15.36	0.15	15.40	0.15	-0.290	-0.330	-0.290	0.49	10

The catalog absolute magnitudes and slope parameters were taken from the MPC's file mpcorb.dat dated 2011 Nov. 27 ($H_{\mathrm{MPC}}, G_{\mathrm{MPC}}$), from the AstDyS files allnum.cat, ufitobs.cat and singopp.cat dated 2011 Dec. 16 ($H_{\mathrm{AsD}}, G_{\mathrm{AsD}}$), and from the JPL Horizons files elements.numbr and elements.unnum dated 2011 Nov. 24 ($H_{\mathrm{JPL}}, G_{\mathrm{JPL}}$). The references for the H and G estimates, their uncertainties δH and δG and the lightcurve amplitudes are following: (1) Harris and Young (1989), (2) Harris et al. (1989), (3) Harris et al. (1992), (4) Harris et al. (1999), (5) Pravec et al. (1996), (6) Pravec et al. (1998), (7) Pravec et al. (2000), (8) Pravec et al. (2006), (9) Pravec et al. (2012), (10) Pravec et al., http://www.asu.cas.cz/~ppravec/newres.htm, (11) Reddy et al. (2007), (12) Wisniewski et al. (1997). Entries from reference (12) had not tabulated uncertainties of the G values in the original source (their Table 2), but they are given in the text of the paper; we refer readers needing the δG values for those entries to the original paper.

3 Accuracy and biases of the orbit catalog H values

We compared the H estimates for asteroids in our sample with their H values from the orbit catalogs MPCORB, Pisa AstDyS and JPL Horizons.[4] We list the differences ($H_{\rm MPCORB} - H$), ($H_{\rm AstDyS} - H$) and ($H_{\rm JPL} - H$) in Table 2 and plot them vs H in Figs. 1 to 3.

Generally, the catalog H values are good in the range of small H (large asteroids). There are small or no systematic offsets: the mean difference between the catalog and our H estimate is +0.040, +0.047 and -0.001 mag for MPCORB, AstDyS and JPL Horizons, respectively, and the standard deviations are 0.104 to 0.134 mag in the smallest H ranges (see Table 3). Though these standard deviations are greater than most of the estimated uncertainties δH for the large asteroids, they are actually not much greater than a typical dispersion of H with observing aspect (see Section 2.6). So, the catalog H values for the largest asteroids are almost as good as they could be estimated without a pole and shape modeling.

Going to smaller sizes (higher H values), we see a systematic offset to negative ($H_{\rm catalog} - H$) values (i.e., the catalog H data being systematically too bright on average) with similar behaviors, but differing in some details in the three catalogs. Analyzing the behavior of the mean offset of the catalog H values, we plotted the running mean curves with the box size of 51 data points in Figs. 1 to 3 and we approximated the dependence with fitting a constant offset to points with the smallest H and linear functions in specific ranges of H; their parameters are given in Table 3. The "break points" separating the different fitted ranges were chosen somewhat arbitrarily at H values near points where the running mean curve changes slope substantially and where the adjacent fitted lines cross.

The common features of the H data in the three catalogs are following: The mean ($H_{\rm catalog} - H$) reaches a minimum (i.e., maximum negative offset) at $H \sim 14$. The negative offset increases steeply in the range from $H \sim 12.2$ to ~ 13.7, but then it decreases rather slowly from 14 to 20.

Some interesting differences between the H data in the catalogs are following: The standard deviation of the MPCORB H data increases fairly gradually with increasing H, from $\sigma = 0.102$ mag in the smallest H range, through 0.162 and 0.200 mag in the ranges centered at H around 10 and 13, to 0.242 mag in the range H = 14–20. The AstDyS data show, however, a higher consistency over a wider range of H, with σ increasing only slightly from 0.134 mag for the brightest asteroids to 0.152 mag for data in the range around $H = 13$, and their data in the highest H range of 14–20 are also internally the most consistent ones of all the three catalogs, with the smallest σ of 0.218 mag. The JPL Horizons data show the most diverse behavior. They are internally pretty

[4] In the AstOrb catalog, they adopt the MPCORB H values for numbered asteroids; we study the data from the three catalogs with independently calculated H values.

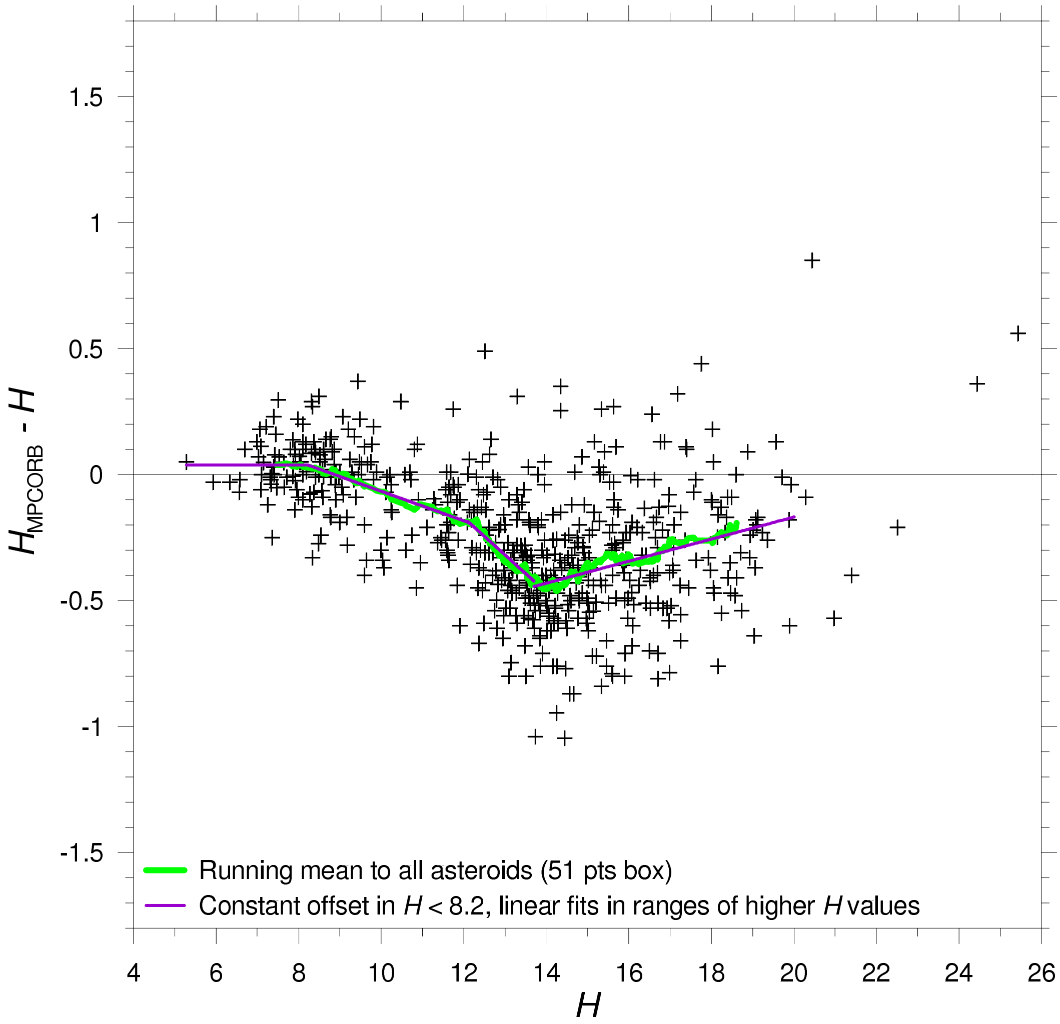

Fig. 1. Differences between the MPCORB catalog values and our absolute magnitude estimates are plotted. Parameters of the lines fitted to the data are given in Table 3.

consistent with $\sigma = 0.116$ mag and zero mean offset up to $H \sim 11$ where there begin to occur big outliers and their data become quite noisy above $H = 12$, with the standard deviation $\sigma \sim 0.33$ mag between $H = 12.3$ and 20.

The observed trends of the systematic offsets of the catalog H values are quite curious. We will discuss their possible causes in Section 5. First, in following subsections we analyse certain correlations of the mean offset with taxonomic types and lightcurve amplitudes.

3.1 Correlation of the mean offset with taxonomic classes

In Figs. 4 to 6, there are highlighted data for asteroids with known taxonomic types that uniquely classify the asteroids as medium- or low-albedo ones. The former group are asteroids that have been classified as S, A or L types, while

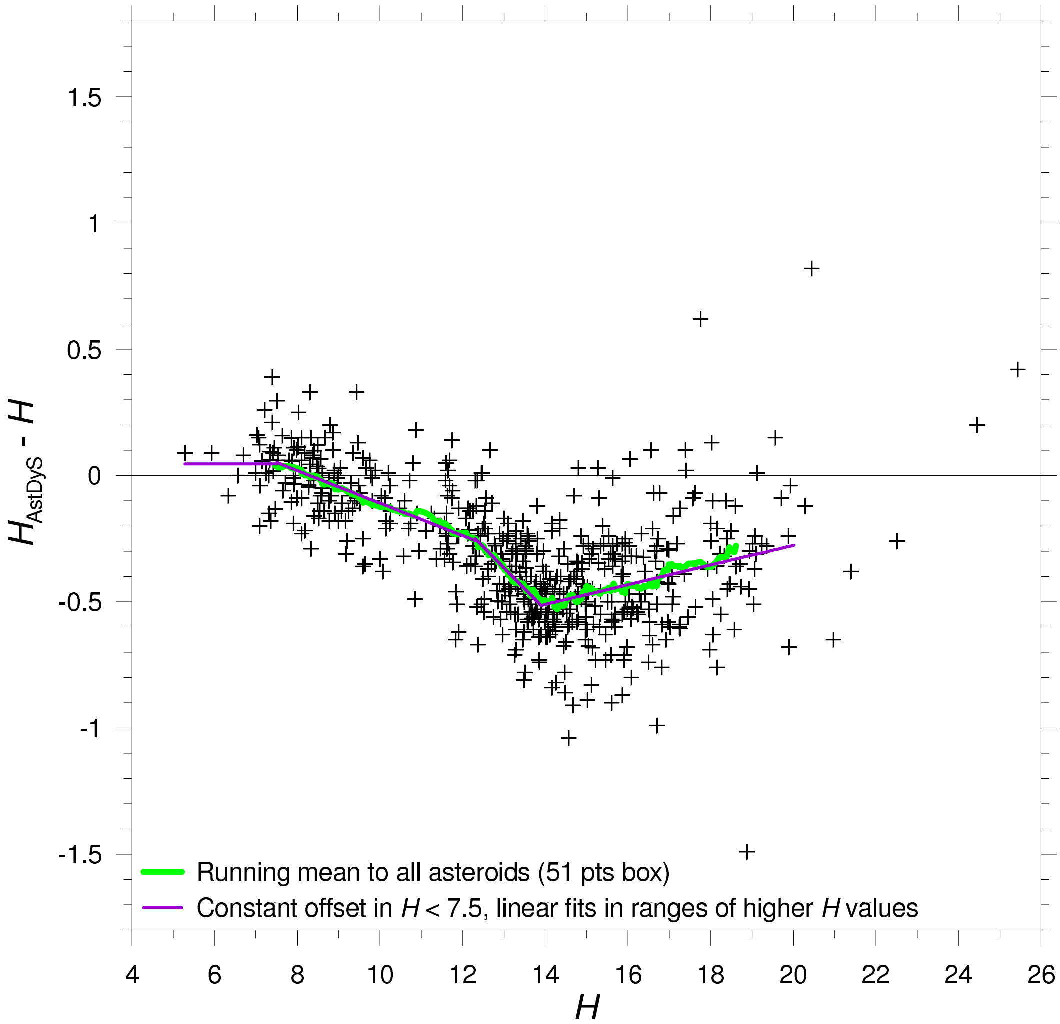

Fig. 2. Differences between the Pisa AstDyS catalog values and our absolute magnitude estimates are plotted. Parameters of the lines fitted to the data are given in Table 3.

the latter are those classified as C, G, B, F, P or D types. The taxonomy data were taken from Tholen (1989), Bus and Binzel (2002), DeMeo et al. (2009), Xu et al. (1995), and Lazzaro et al. (2004) as compiled in Neese (2010).

Among asteroids with H greater than $\sim$ 10 in our sample, most of those with known taxonomic types are medium-albedo ones. This is not surprising, as among the intrinsically fainter asteroids, there are fewer with established low-albedo taxonomic classes as those concentrate in outer parts of the main belt and thus they are mostly seen at fainter apparent magnitudes and so they are more difficult to be observed spectro-photometrically. Another reason was that our photometric observational projects sampling the range $H >$ 12 concentrated on inner-main belt and near-Earth asteroids where S and similar types visually predominate (having a higher number density in the H parameter space), so these types predominate in our sample at higher H values too, though we have got some low-albedo ones among the targeted and especially the accidentally imaged asteroids as well (see Section 4). As

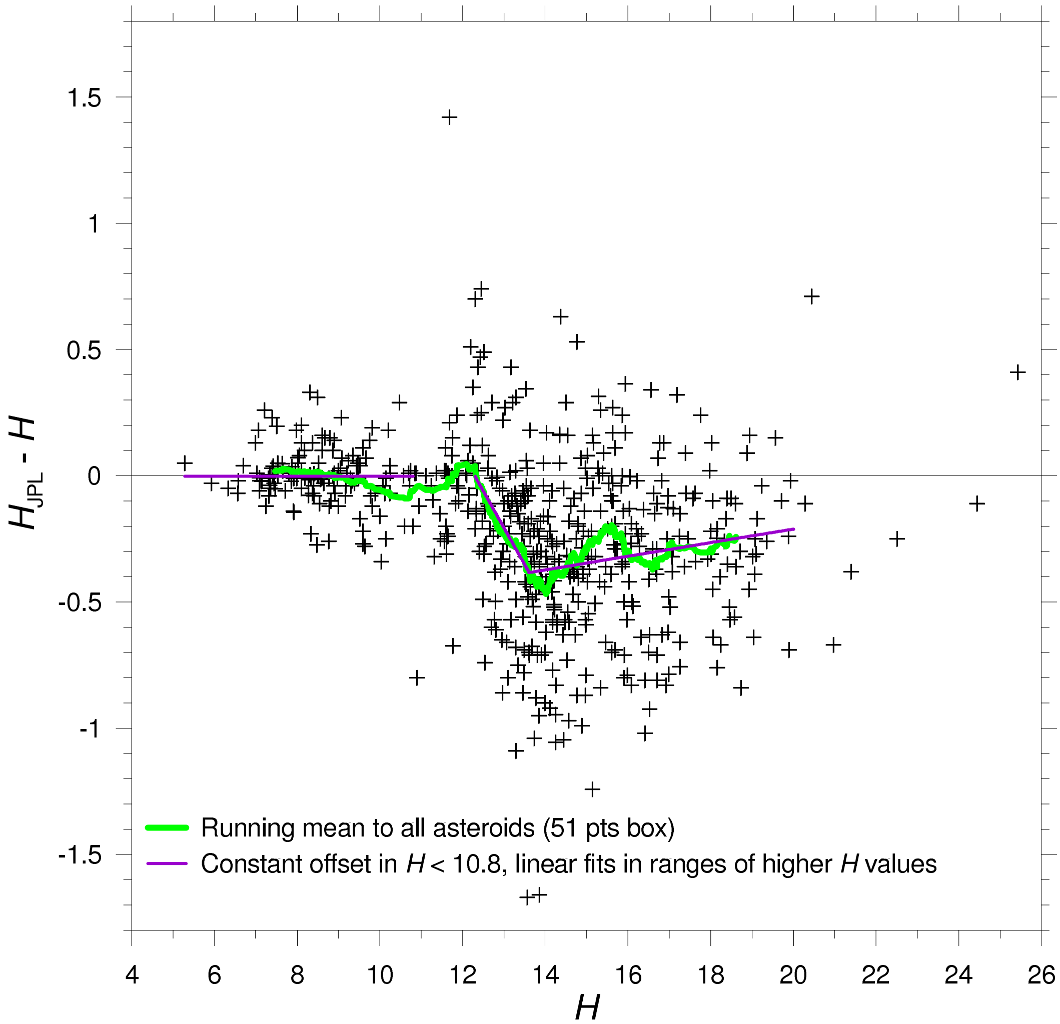

Fig. 3. Differences between the JPL Horizons catalog values and our absolute magnitude estimates are plotted. Parameters of the lines fitted to the data are given in Table 3. We did not fit a line in the range $H = 10.8$–12.3 due to the small number of points affected by a few big outliers there.

the statistics of asteroids with known low-albedo types in the $H > 10$ range is poor, we limit ourselves to analysing correlations of the mean offset with taxonomic classes to the range $H < 10$ only.

Among large asteroids with $H \lesssim 10$, there appears to be a significant systematic difference between the mean offsets of the medium- and the low-albedo ones in the orbit catalogs H values. The difference is of nearly the same magnitude of 0.09 mag in the MPCORB and the Pisa AstDyS catalogs, but it is smaller, 0.043 mag in the JPL Horizons catalog. Specifically, for points with $H < 9.5$, the mean of $(H_{\mathrm{MPCORB}} - H)$ values for the low- and the medium-albedo type asteroids are $+0.064$ and -0.024 mag, respectively. The mean of $(H_{\mathrm{AstDyS}} - H)$ values for the low- and the medium-albedo type asteroids are $+0.044$ and -0.048 mag, respectively. The mean of $(H_{\mathrm{JPL}} - H)$ values for the low- and the medium-albedo type asteroids are $+0.024$ and -0.019 mag, respectively.

Table 3
Parameters of the linear fits in Figs. 1 to 3, $(H_{\mathrm{catalog}} - H) = aH + b$.

Catalog	H range	N	a	b	σ
MPCORB	< 8.2	53	0	0.040	0.102
	8.2 – 12.1	125	−0.0585	0.520	0.162
	12.1 – 13.7	124	−0.1478	1.603	0.200
	13.7 – 20.0	274	0.0438	−1.044	0.242
AstDyS	< 7.5	26	0	0.047	0.134
	7.5 – 12.3	160	−0.0643	0.535	0.144
	12.3 – 13.9	138	−0.1660	1.793	0.152
	13.9 – 20.0	256	0.0390	−1.056	0.218
JPL Horizons	< 10.8	139	0	−0.001	0.116
	12.3 – 13.6	107	−0.2909	3.576	0.348
	13.6 – 20.0	285	0.0270	−0.750	0.322

N is the number of fitted points in the given range of H, σ is the standard deviation of the points from the fitted line.

We suspect that a reason for the observed "albedo dispersion", with large low-albedo (mostly C type) asteroids having the systematically positive H offset while large medium-albedo (mostly S type) ones having the systematically negative H offset in the catalogs, is due to that the orbit computers assumed one default value for G of 0.15 for most asteroids in their computations of the absolute magnitudes from astrometric magnitude estimates. Another effect may be that of the assumed single value of $(V - R) = 0.40$ they used for conversion of astrometric magnitude estimates that are made effectively in the R band mostly (as the maximum sensitivity of standard CCDs is in the red). As S types have actually higher mean G and $(V - R)$, while C types have lower mean G and $(V - R)$ than the default values, the H values derived by the orbit computers for asteroids of the two different albedo type groups are offset in the opposite directions.

3.2 Correlation of the mean offset with lightcurve amplitude

There is apparent a small correlation of the $(H_{\mathrm{catalog}} - H)$ values with asteroid lightcurve amplitude. In Figs. 7 to 9, there are highlighted asteroids with amplitude ≥ 0.4 mag. The high-amplitude asteroids show a slightly greater negative mean H offset, estimated with the running mean plotted in the figures which is shifted down by a few 0.01 mag to ~ 0.1 mag from the mean offset curve for all asteroids at most H values.

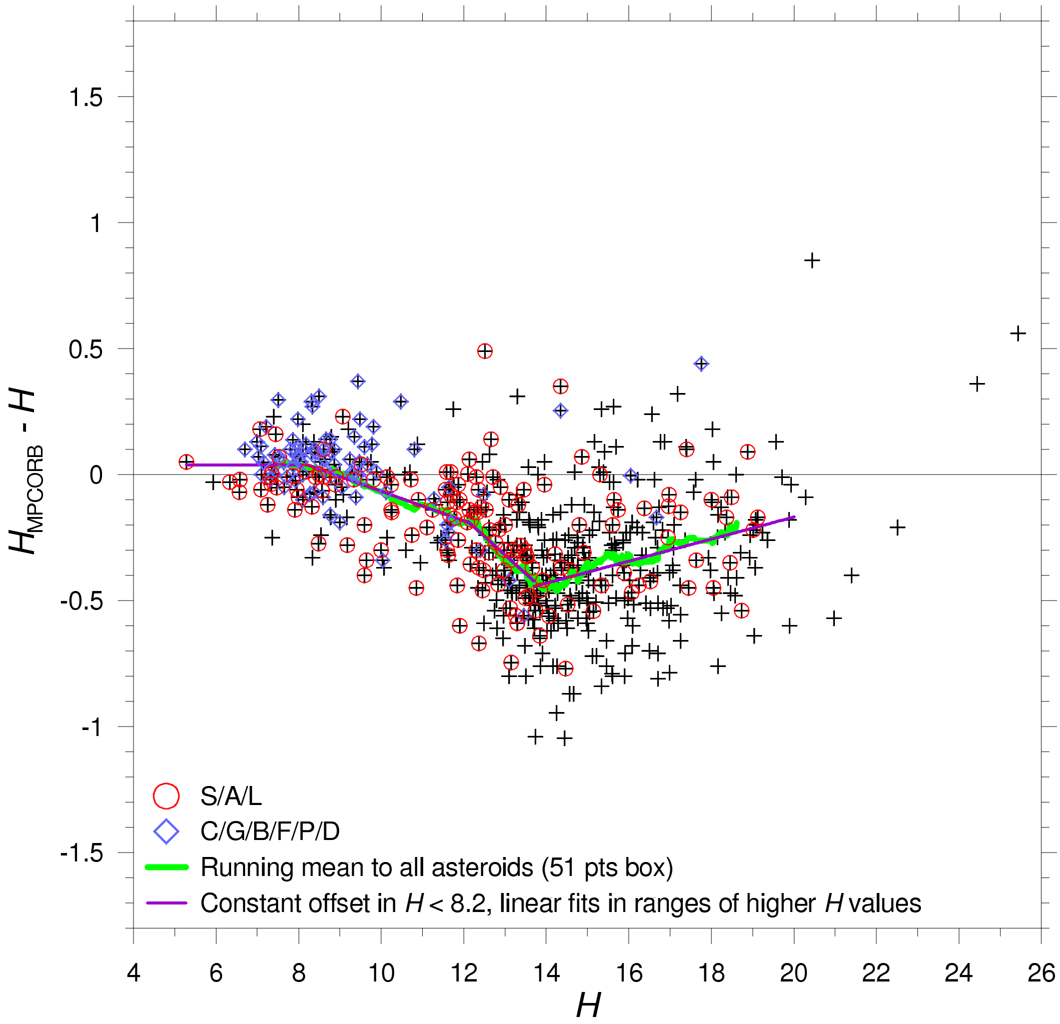

Fig. 4. Systematic offset between the MPCORB absolute magnitudes of medium (S, A, L) and low-albedo types (C, G, B, F, P, D) is apparent especially among bright asteroids with $H < 10$.

There may be a few reasons for high-amplitude asteroids showing the greater negative offset of the catalog H values. The astrometric observers could made their magnitude estimates more often from images taken when the asteroid was brighter than its mean light. It might be intentional for some follow-up observers, e.g., due to their aim to do more accurate astrometry on images with higher signal-to-noise ratio so they might choose measuring images taken closer to the lightcurve maximum rather than minimum. But it could also be a natural consequence of the flux-limited observations, both by the surveys and follow-up stations; a high-amplitude asteroid with mean brightness close to the signal-to-noise ratio limit of a given astrometric program is positively detected more frequently close to the lightcurve maximum than minimum. Another cause might be that high-amplitude asteroid observations are more likely to be taken at asteroid aspects close to equator-on where asteroids show lower mean cross-section than at aspects of higher asterocentric latitudes. So the mean absolute magnitude estimated at time when an asteroid shows a higher amplitude is typically fainter than the mean H estimated at an average aspect if the asteroid's pole obliquity is not close to 0 or 180°.

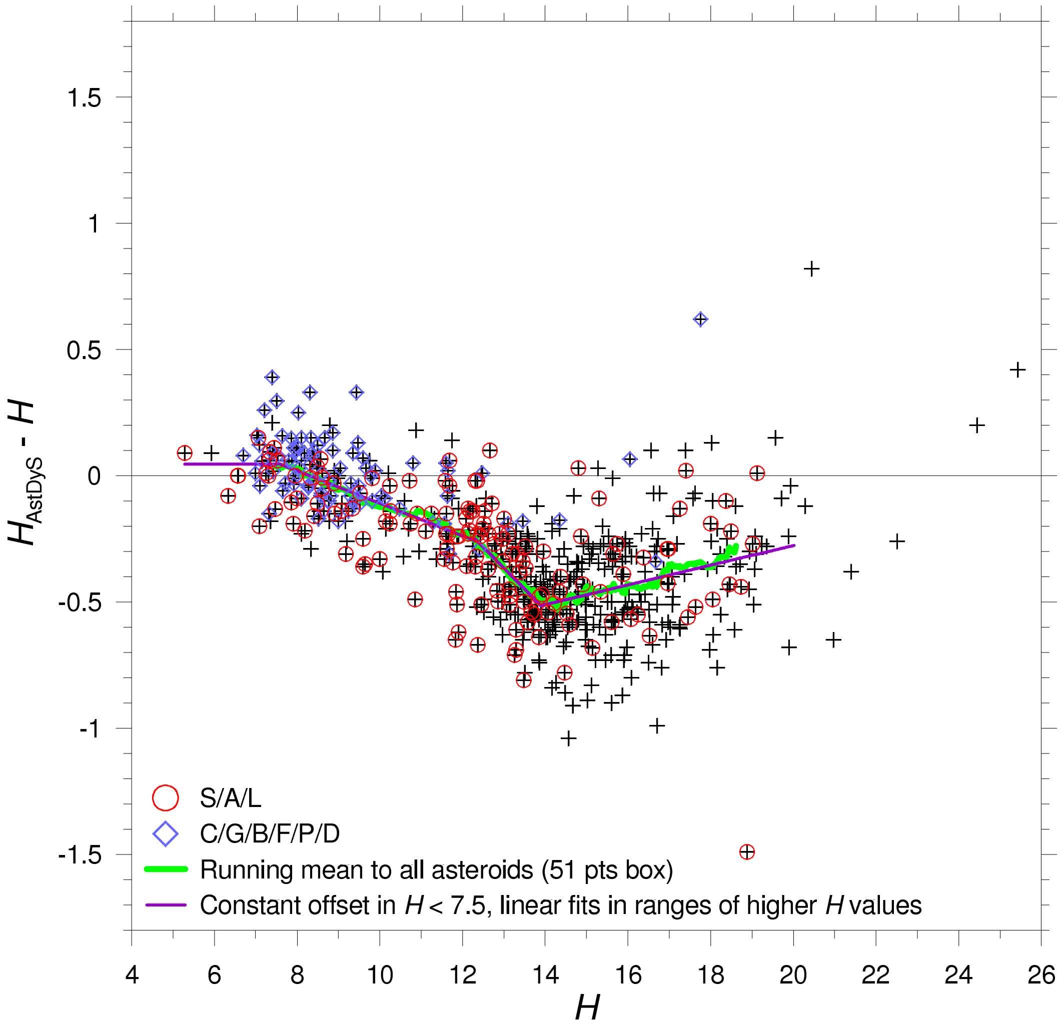

Fig. 5. As in Fig. 4, but for the AstDyS catalog absolute magnitudes.

3.3 Comparison with earlier works

The systematic offset of the H values in orbit catalogs was mentioned by several asteroid photometrists before. One particularly interesting work is Parker et al. (2008). They compared Johnson V data that they derived from the photometric measurements from the Sloan Digital Sky Survey (SDSS) Moving Object Catalog 4 for a sample of about 64,000 asteroids observed at solar phases between 3 and 15° to their apparent magnitudes (V_c) predicted from the H and G values from the AstOrb catalog.[5] They found the mean $(V_c - V) = -0.23$ mag. A correction of this offset to zero phase to obtain $(H_c - H)$, accounting for a difference between actual G values of the asteroids and the default $G = 0.15$ assumed for most asteroids in AstOrb, is estimated to be about -0.02 mag, assuming the mean solar phase of the SDSS observations of 9° and a mean $G = 0.18$ for asteroids in the sample (corresponding

[5] See footnote 4 for comments on the correspondence between the H values in the AstOrb and MPCORB catalogs.

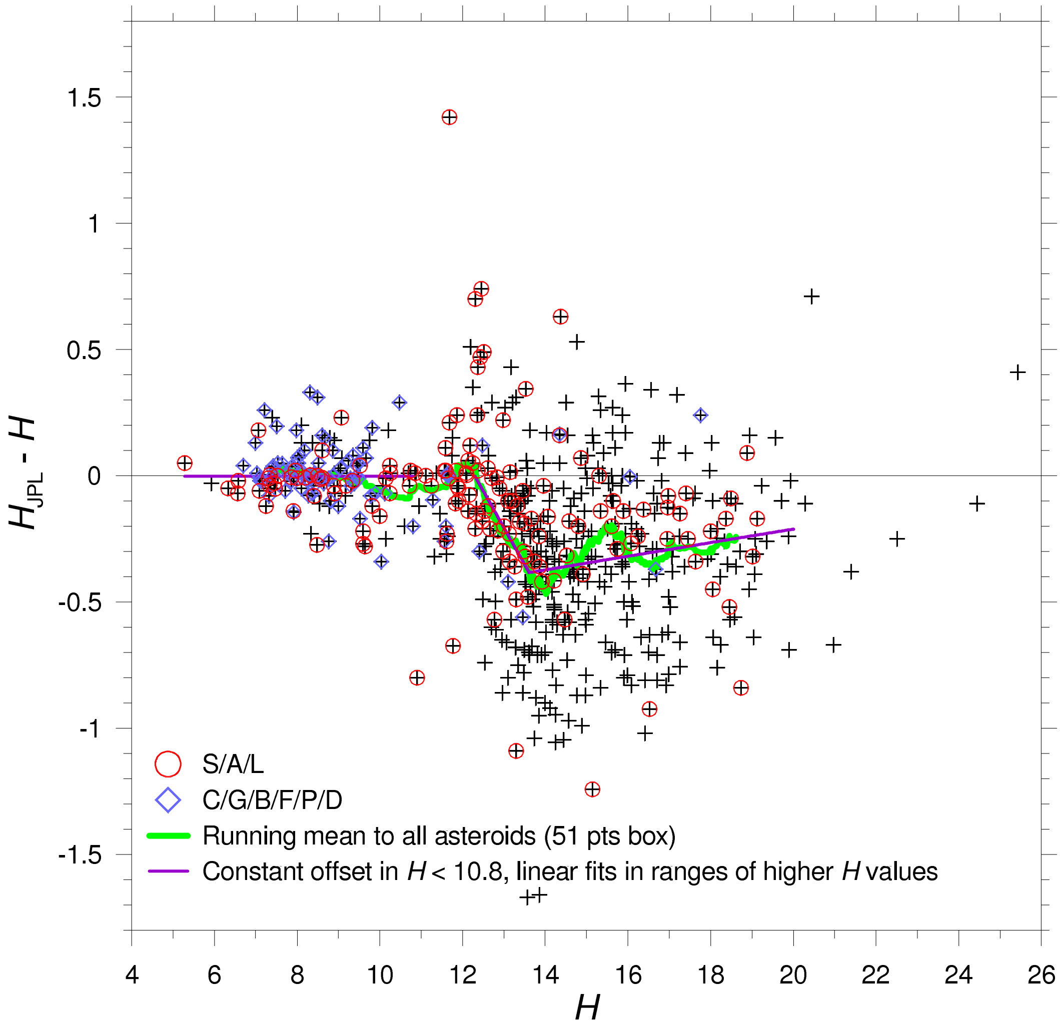

Fig. 6. As in Fig. 4, but for the JPL Horizons catalog absolute magnitudes.

to a 50:50 ratio between S/S-like and C/C-like asteroids in the sample). The resulting mean $(H_{\rm AstOrb} - H) \simeq -0.25$ mag is within the range of mean $(H_{\rm MPCORB} - H)$ that we found changing from -0.17 to -0.43 for H from 20.0 to 14.0 where most of the asteroids in the SDSS sample lie. To do an exact comparison, we will have to compute a weighted mean $(H_{\rm MPCORB} - H)$ for the particular distribution of the H values in the SDSS sample; this is a subject of future work.

Worth mentioning is also the earlier work using SDSS data by Jurić et al. (2002). They did an analysis similar to Parker et al. (2008), though on an earlier and smaller sample, but they compared the SDSS magnitudes to both the AstOrb and MPCORB magnitudes, and they also analysed a correlation of the offset with asteroid color. Specifically, they compared Johnson V data derived from the photometric measurements from the Sloan Digital Sky Survey (SDSS) Early Data Release for a sample of 1335 asteroids to their apparent magnitudes (V_c) predicted from the H and G data from the AstOrb and MPCORB catalogs. They found the mean $(V_{\rm AstOrb} - V) = -0.41$. They estimated the correction to zero phase to be -0.02 ± 0.01, which gives the

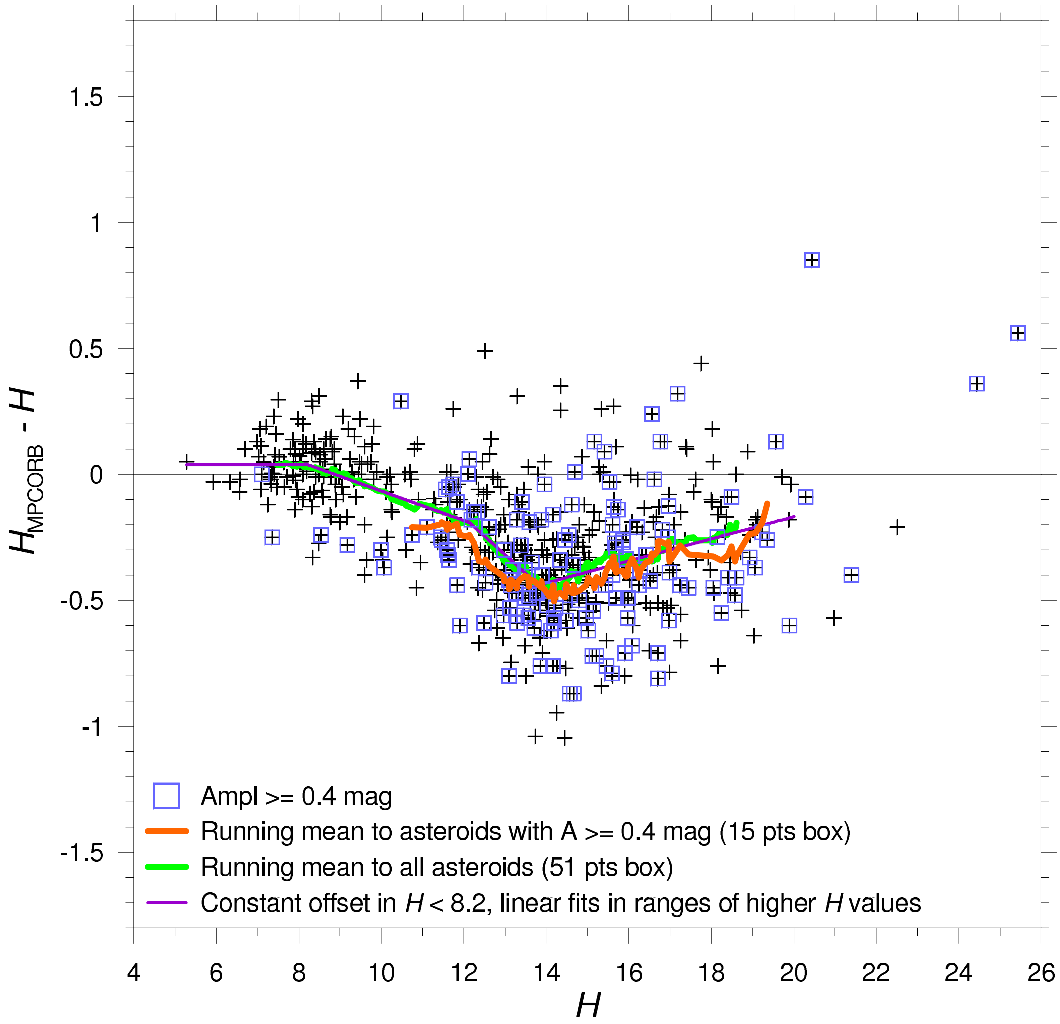

Fig. 7. A higher negative mean offset of the MPCORB absolute magnitudes for high-amplitude asteroids is shown.

mean $(H_{\rm AstOrb} - H) = -0.43$ for their sample. They also report the mean $(V_{\rm MPCORB} - V) \sim -0.2$; we speculate that the difference between the offsets of the two catalogs may reflect their different magnitude correction/weighting scheme the two orbit computer groups used at that time.[6] They also found a correlation of the apparent magnitude offset with the SDSS asteroid color, with the median offsets of the AstOrb magnitudes $(V_{\rm c} - V)$ of -0.34 and -0.44 for subsamples of blue and red asteroids, respectively.

The offset they found for the MPCORB magnitudes is somewhat lower than the offset we have got for asteroids with absolute magnitudes similar to the asteroids in their sample; for asteroids in our sample with H from 12 to 16, we got an average $(H_{\rm MPCORB} - H)$ of -0.36. A reason for the lower offset they

[6] Unlike in our work where our sample consists of numbered asteroids mostly and their AstOrb H values were taken from MPCORB (see footnote 4), the sample of Jurić et al. (2002) had a much greater fraction of (then−)unnumbered asteroids for which there were independent H estimates in the AstOrb catalog.

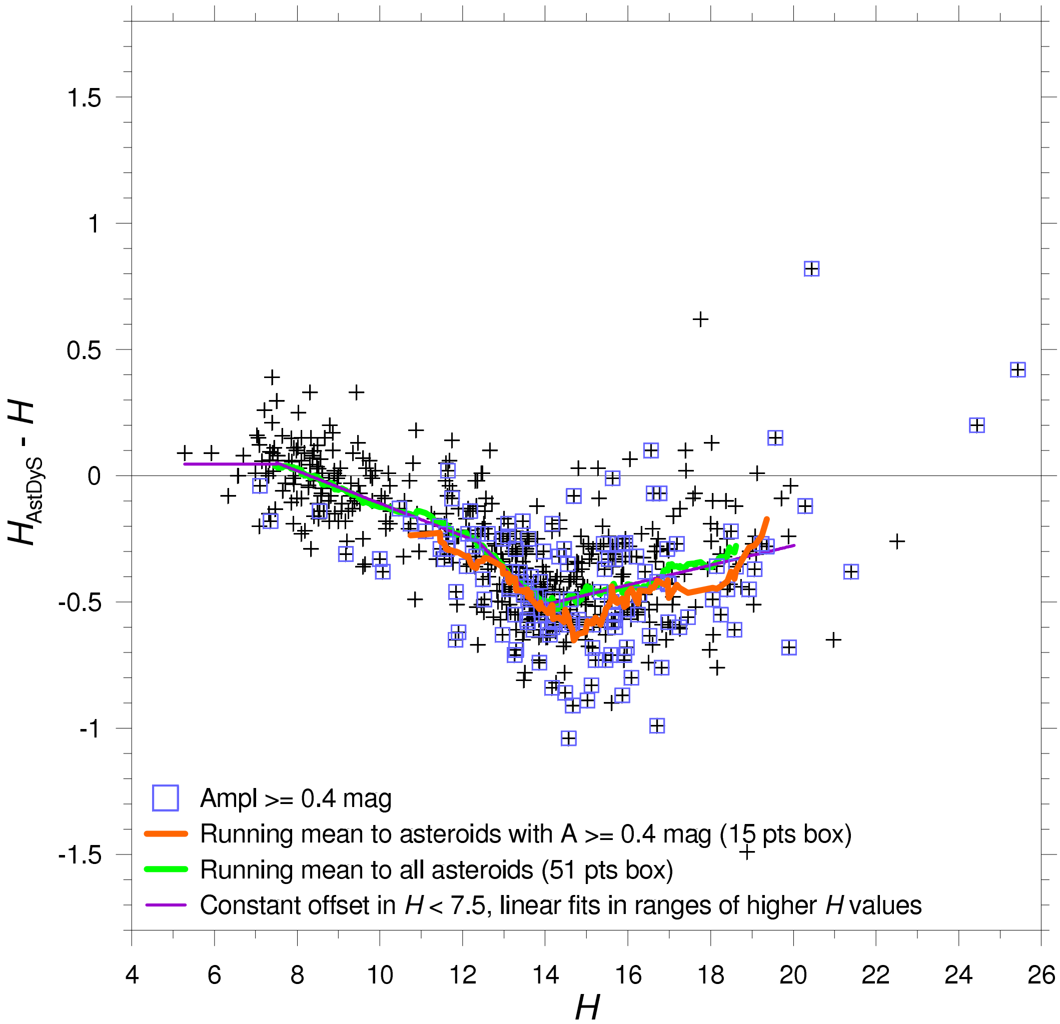

Fig. 8. As in Fig. 7, but for the AstDyS catalog absolute magnitudes.

found ten years ago is unclear. One possible cause is that the asteroid surveys predominating in the last ten years might produce more biased magnitude estimates than the (same or different) surveys did before 2002, or possibly the MPC's correction/weighting scheme for estimating H values from magnitude estimates worked better for the surveys operating before 2002 than during the last ten years. In any case, users of the H values from orbit catalogs should be aware that the offset of the catalog values can change with time due to development on the side of asteroid surveys (possible changes in photometric reduction procedures, or simply new surveys with their individual biases starting or increasing their relative contribution to the magnitude estimates data and older ones lessening or stopping their operation) or on the side of orbit computers (e.g., new correction and weighting schemes for magnitude estimates used in computing the H values).

The correlation of the offset with the SDSS asteroid color that they found is similar to the difference of 0.09 mag between the mean offsets for S/A/L (predominantly S) and C/G/B/F/P/D (predominantly C) types we found among large asteroids (see Section 3.1). There may be a common cause; both

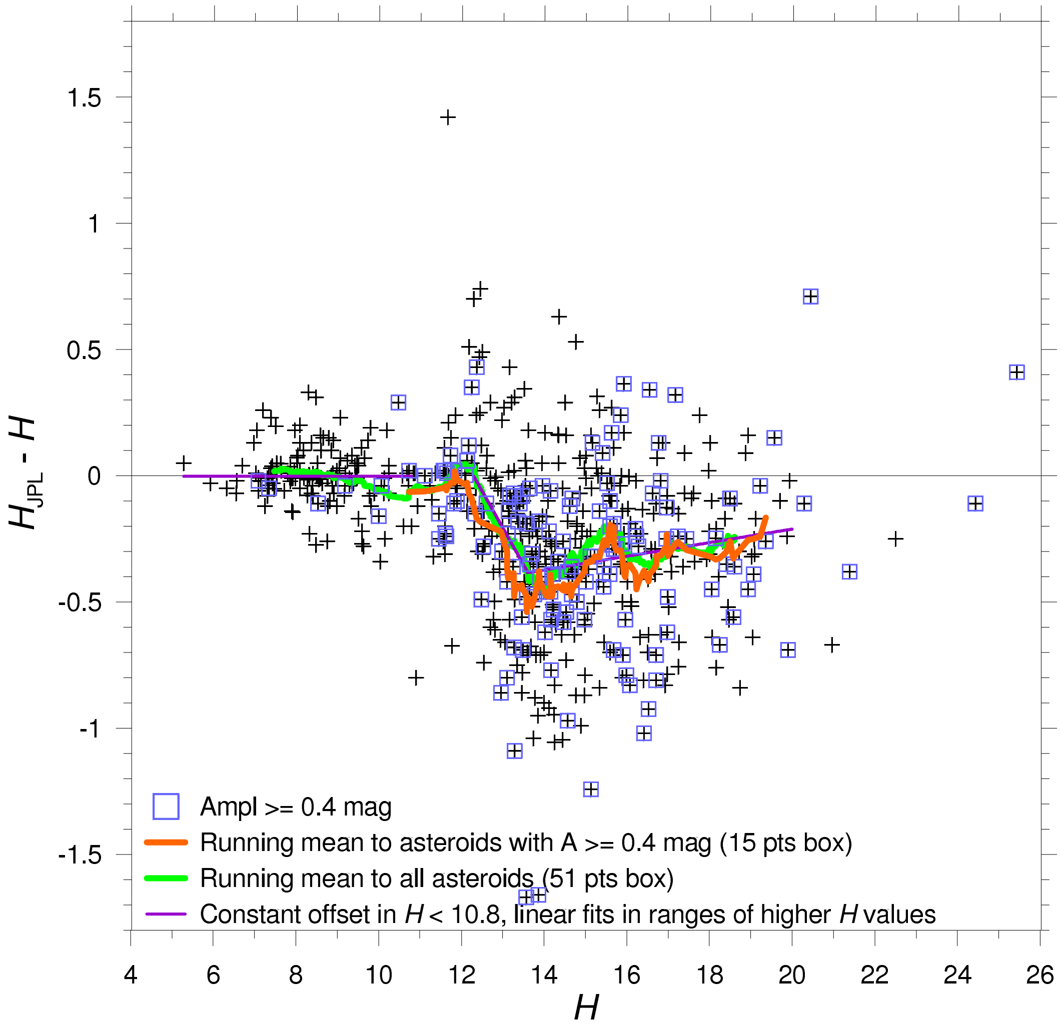

Fig. 9. As in Fig. 7, but for the JPL Horizons catalog absolute magnitudes.

we and Jurić et al. speculate that it may be due to the assumed single value of $(V - R)$ used by the orbit computers for conversion of the astrometric magnitude estimates made effectively in or close to the red band to V for the asteroids of different colors.

Another interesting earlier work is Galád (2010). He analysed the SDSS data for 64 asteroids with rotation periods estimated in previous works, estimated their mean H values and compared them to MPCORB H values. For his sample covering a range of $H = 9.2$ to 17.7 (the median $H = 15.4$), he found an average of $(H_{\mathrm{MPCORB}} - H) = -0.28$, its formal error (mean error of the mean) is ± 0.03. A correction of the offset, which he estimated with assuming $G = 0.15$ for most asteroids in his sample, for an actual estimated mean $G = 0.19$ (for the ratio of 38:26 between S/S-like and C/C-like asteroids in his sample) is estimated to be -0.03 mag. The resulted corrected mean $(H_{\mathrm{MPCORB}} - H) = -0.31 \pm 0.03$ is within 2σ of a weighted mean of the $(H_{\mathrm{MPCORB}} - H)$ offset of -0.36 we computed for his SDSS asteroids sample from our results given in the first part of this Section 3, so there is a reasonable agreement. Galád also mentioned a small correlation between the catalog absolute magnitudes offset and lightcurve amplitude, which would be in agreement with our results in Sect. 3.2, but his finding was not statistically significant at a level greater than 1σ for the small sample he analysed.

4 Revised *WISE* albedos

We revised the estimates of asteroid albedos and diameters made by Masiero et al. (2011) and Mainzer et al. (2011b) within their NEOWISE project, using our H data and the recalculation method of Harris and Harris (1997). We outline our application of the method in following.

The relationship between the effective diameter, geometric albedo, and absolute magnitude is

$$D\sqrt{p_V}10^{H/5} = K, \tag{1}$$

where

$$K \equiv 2 \text{ AU} \cdot 10^{V_{sun}/5} = 1329 \pm 10 \text{ km}. \tag{2}$$

(See Pravec and Harris, 2007, for its derivation from the definition of those parameters plus the apparent magnitude of the Sun at 1 AU, V_{sun}, which includes the definition of the V magnitude scale.) The geometric and Bond albedos are related by

$$A_V \equiv qp_V, \tag{3}$$

where q is the phase integral. On the H–G system, q is derived from G via

$$q = 0.290 + 0.684G. \tag{4}$$

A basic assumption of the method is that the quantity $(1-A_V)D^2$ is invariant. This can be used with Eqs. 1 to 4 to compute the revised value of albedo

$$p_{V\,\mathrm{rev}} = \left[q_{\mathrm{rev}} + (1 - qp_V)\frac{D^2}{K^2}10^{0.4H_{\mathrm{rev}}}\right]^{-1}, \tag{5}$$

where H_{rev} is the new value of H, q and q_{rev} are old and new values of the phase integral (Eq. 3), corresponding to old and new values of the slope parameter, G and G_{rev}. The revised diameter D_{rev} then follows from Eq. 1. We point out that the NEOWISE diameter estimates were generally stable and our revised diameters differ from their by an insignificant amount; a diameter estimate resulting from the thermal modeling is almost insensitive to uncertainty in H (see Harris and Harris, 1997).

A reason for this modification of the Harris&Harris method was that Masiero et al. (2011) and Mainzer et al. (2011b) allowed their H values to float in their modeling for some asteroids, but in their data files their gave only the original, starting H values and not their final, "best" fit ones. Thus their listed values of the resulted D, p_V and the starting H values do not obey Eq. 1 in those cases.[7] Therefore we used the present modification of Eq. 5 that uses the D value rather than the (non-available for the NEOWISE estimates) H value.

The original as well as the revised data are listed in Table 4. As the *WISE* data modelers assigned a random error of 0.2 or 0.3 mag to the MPCORB H values that they used in their albedo estimations (Masiero et al., 2011; Mainzer et al., 2011a,b)[8] and all our H estimates have uncertainties ≤ 0.20 mag, and considering that the Harris&Harris recalculation method should not contribute with a significant additional uncertainty, random errors of our revised albedos and diameters should be lower than or at worst equal to the uncertainties δD and δp_V calculated by Mainzer et al. and Masiero et al. that we list in Table 4. We did not attempt to revise these uncertainties as we did not have available an information on what was a contribution of their assumed 0.2- or 0.3-mag uncertainties for the MPCORB H values in their error calculation budgets for individual asteroids.

The revised albedo and diameter data are plotted in Fig. 10. In the figure, we highlighted points of known low-, medium- and high-albedo type asteroids. The mean p_V and the standard deviation (dispersion) of the sample are 0.057 ($\pm$0.013) and 0.197 ($\pm$0.051) for the Tholen/Bus/DeMeo C/G/B/F/P/D and the S/A/L types, respectively. The standard errors of the mean albedos are 0.002 and 0.006, respectively, but we consider that systematic observational or modeling errors may be greater than these formal errors.

Mainzer et al. (2011a) showed an apparent trend of S-type asteroids having higher albedos at smaller diameters, see their Figs. 1 and 2. They suspected that it was an artifact in the data rather than a real feature of the asteroid population, and they suggested that it could be due to "selection biases against small, low albedo objects". We confirm their suspicion that the apparent albedo trend with size they saw was an artifact. Our data reveal that it was largely due to the systematic bias of MPCORB H values for smaller asteroids in the range $H > 10$. From our revised p_V–D dataset, there is apparent only little difference between large and small S/A/L type asteroids; the mean p_V is 0.178 ± 0.008 and 0.209 ± 0.008 for S/A/L type asteroids larger and smaller than $D = 25$ km, respectively. The difference between the mean

[7] An example of the case where the resulted D, p_V and the starting H values listed in the data files by Masiero et al. (2011) and Mainzer et al. (2011b) are mutually inconsistent is (70) Panopaea. Their listed $D = 139.007$ km, $p_V = 0.0397$ and $H = 8.11$ give the product on the left side of Eq. 1 equal to 1160 km, which differs from the value of 1329 km from the definition by 13%.

[8] Mainzer et al. (2011a) took some H values for their detected and analysed asteroids also from the Light Curve Database (LCDB; Warner et al., 2009). We note that many of the H values in the LCDB were actually taken from MPCORB.

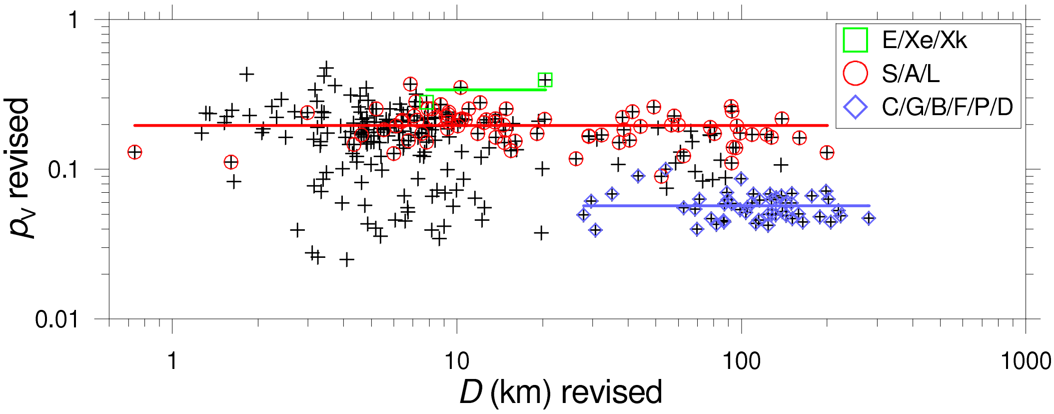

Fig. 10. The *WISE* albedos and diameters revised with the unbiased absolute magnitudes.

albedos of 0.031 is only marginally significant, as the formal standard error of the difference, propagated from the mean errors of the means of p_V values in the two size ranges, is 0.011. This minor difference might be a real feature with smaller S-type asteroids having slightly brighter surfaces possibly due to being less space weathered or having different scattering properties, but it could also be a small residual artifact, e.g., due to a small observational bias towards higher-albedo asteroids in the sample of small S types or a small systematic size dependence of their thermal properties not accounted for in the applied thermal models.

5 Possible causes for the offset in catalog H values

Most of the procedures that astrometric surveys, follow-up observers, and orbit calculators used for estimating the apparent magnitudes of asteroids and derivation of the H values have not been comprehensively published so far. Thus we cannot really analyse reasons for the offset in the catalog H values. We present a few reasonable guesses and speculations in following.

The large offset seen for asteroids in the range of $\pm$ a few magnitudes about $H = 14$, which are mostly main belt asteroids in our sample, may be related to the fact that a number of their astrometric observations could be done not very high above magnitude limits of the most productive surveys, especially when observed close to their aphelions or at higher solar elongations away from opposition. Results of photometric reduction of faint asteroid images are sensitive to things like a quality of flat field, an accuracy of estimation of the sky background level and a quality of background objects removal.

Another possible way how main belt asteroids with $H > 12$ could got biased magnitude estimates is if the few surveys which took most of their observations had some flaws in their photometric reduction procedures or a way how they reported the magnitude estimates to the MPC. For instance, if observations taken with a clear or no filter are reported without a filter code, the magnitude estimates are taken as B band observations —for the B band being the default for astrometric magnitude estimates, a standard inherrited from the photographic plate time— and they are converted to V with subtracting $(B-V) \sim 0.8$ (about the mean asteroidal color index), resulting in extremely incorrect magnitudes. Or if observations calibrated using local standards with magnitudes in the Johnson R system are erroneously reported as V, then they are off by about -0.4 or -0.5 mag, depending on the $(V-R)$ color index of a given asteroid. We do not know whether the above two or some other errors occured for reported asteroid magnitude estimates frequently enough so that they could cause the huge offset. Anyway, a thorough check of procedures of reducing and reporting magnitude estimates used by the major surveys would be good.

A reason for why the trend reverses above $H = 14$, with the mean offset in the MPCORB values being about half as large at $H \sim 19$ than at ~ 14 may be related to the fact that there is an increasing proportion of near-Earth asteroids (NEAs) with increasing H in the sample. The MBA/NEA turning point is about $H = 16$; while most of the asteroids in our sample in the range $H = 15$–16 are main belt asteroids (there are 17 NEAs among the 62 asteroids in this H range), most of those in $H = 16$–17 are NEAs (29 of 44). The reason may be in that some or many NEAs got a substantial number of targeted follow-up observations, while small and faint main belt asteroids normally do not get any targeted follow-up and most or all their observations are by surveys only; targeted observations are potentially of a higher quality.

Of an interest is also that the AstDyS H values are intrinsically more consistent (see their smaller scatter around the mean curves and fitted lines in Section 3), but they are slightly more biased than the MPCORB values. It seems that the magnitude correction/weighting scheme used at AstDyS does a good work in converting magnitude estimates by different stations to become a more homogeneous set, but it does not eliminate their overall bias.

We conclude with stating that it appears to be very necessary and urgent to re-examine the photometric reduction routines and ways of reporting magnitude estimates used by asteroid astrometric observers. Improvements on the side of orbit computers, e.g., a use of more sophisticated magnitude correction and weighting schemes for estimating the H values, tying magnitude estimates reported by astrometric stations to accurate observations by photometric observers, could fix the situation at least partially as well. But improvements in measurement rather than subsequent data processing are always the preferred way. In particular, calibration using photometric star catalogs would be superior to using magnitudes given in most astrometric star catalogs. If the H values from orbit catalogs are to be used for purposes like asteroid albedo estimation or size-frequency distribution determination, they should be seriously more accurate than they are now.

Acknowledgement

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Table 4: *WISE* diameter and albedo data

Asteroid		*WISE*					H	G	Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V			D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
8	Flora	0.28	140.000	1.160	0.2614	0.0484	6.560	0.320	138.814	0.2179	S	S		Sw			
9	Metis	0.17	199.591	0.000	0.1343	0.0000	6.330	0.230	199.959	0.1298	S	S				T	T
11	Parthenope	0.15	159.108	5.944	0.1585	0.0365	6.570	0.240	160.091	0.1623	S	S	Sk	Sq			
12	Victoria	0.22	126.643	3.199	0.1400	0.0137	7.060	0.220	127.343	0.1633	SL	S	L			D	D
17	Thetis	0.15	93.335	2.627	0.1597	0.0092	7.900	0.230	93.337	0.1403	S	S	Sl	S			
19	Fortuna	0.10	223.000	43.596	0.0499	0.0198	7.152	0.162	223.193	0.0489	CG	G	Ch	Ch			
24	Themis	0.19	202.336	6.054	0.0641	0.0157	7.088	0.180	202.248	0.0631	CB	C	B	C		B	C
30	Urania	0.15	98.408	2.136	0.1711	0.0338	7.530	0.230	99.006	0.1753	S	S	Sl	S			
31	Euphrosyne	0.15	280.000	60.776	0.0454	0.0445	6.700	0.090	279.821	0.0471	C	C	Cb				
38	Leda	0.15	116.000	15.501	0.0617	0.0162	8.315	0.090	115.858	0.0621	C	C	Cgh	Cgh			
45	Eugenia	0.07	206.141	6.218	0.0458	0.0055	7.422	0.130	206.290	0.0446	CF	FC	C				
46	Hestia	0.06	124.000	9.641	0.0520	0.0113	8.400	0.120	124.089	0.0501	PX	P	Xc				
47	Aglaja	0.16	138.000	11.108	0.0672	0.0091	7.861	0.178	138.038	0.0665	CB	C	B			B	B
53	Kalypso	0.15	115.000	10.324	0.0400	0.0065	8.660	0.090	115.025	0.0459	CX	XC			C		
57	Mnemosyne	0.15	122.466	4.699	0.1817	0.0468	7.090	0.220	122.731	0.1711	S	S	S	S		S	S
58	Concordia	0.15	92.307	1.541	0.0592	0.0051	8.860	0.090	92.195	0.0594	C	C	Ch	Ch		Caa	Cgh
60	Echo	0.27	60.000	3.519	0.1905	0.0245	8.484	0.250	60.028	0.1980	S	S	S				
70	Panopaea	0.14	139.007	3.851	0.0397	0.0090	8.100	0.130	139.327	0.0524	C	C	Ch	Cgh			
71	Niobe	0.40	92.842	0.644	0.2475	0.0346	7.310	0.400	92.753	0.2446	SX	S	Xe				
72	Feronia	0.15	79.478	1.944	0.0742	0.0084	8.790	0.000	79.302	0.0856	SDTG	TDG			STD		
75	Eurydike	0.23	68.593	1.970	0.0979	0.0139	8.970	0.230	68.578	0.0970	MX	M	Xk				
76	Freia	0.15	158.567	8.020	0.0486	0.0072	7.864	0.070	158.400	0.0503	CPX	P	X	C			
77	Frigga	0.16	67.180	0.903	0.1530	0.0461	8.522	0.160	67.176	0.1527	MX	MU	Xe	Xe			
99	Dike	0.15	71.311	3.611	0.0587	0.0138	9.350	0.090	71.282	0.0633	CX	C	Xk	Xk			
102	Miriam	0.15	87.033	0.000	0.0458	0.0000	9.300	0.090	86.930	0.0445	CP	P	C				
107	Camilla	0.08	219.374	5.938	0.0540	0.0113	7.100	0.090	219.378	0.0530	CX	C	X			X	X
109	Felicitas	0.04	89.000	6.165	0.0705	0.0093	8.759	0.030	88.971	0.0700	CG	GC	Ch			Caa	Ch
114	Kassandra	0.15	100.000	0.000	0.0877	0.0000	8.275	0.090	99.798	0.0868	XTK	T	Xk	K			
125	Liberatrix	0.33	61.122	1.084	0.1153	0.0270	8.900	0.220	61.058	0.1305	MX	M	X				
130	Elektra	0.15	198.933	4.108	0.0714	0.0107	6.990	0.090	198.641	0.0716	CG	G	Ch	Ch		Caa	Ch
133	Cyrene	0.13	80.487	1.879	0.1759	0.0168	7.990	0.130	80.452	0.1738	S	SR	S	S		S	S
134	Sophrosyne	0.28	112.200	10.798	0.0440	0.0158	8.770	0.280	112.188	0.0436	C	C	Ch				
135	Hertha	0.15	77.000	7.833	0.1520	0.0500	8.100	0.240	77.697	0.1684	MX	M	Xk				
137	Meliboea	0.15	144.000	11.272	0.0514	0.0106	8.100	0.090	143.788	0.0492	C	C					
139	Juewa	0.15	164.000	25.212	0.0446	0.0232	7.924	0.150	163.995	0.0444	CPX	CP	X				
145	Adeona	0.15	151.000	0.000	0.0434	0.0000	8.050	0.090	150.952	0.0467	C	C	Ch			Caa	Ch
146	Lucina	0.11	131.812	4.794	0.0534	0.0100	8.277	0.186	131.893	0.0496	C	C	Ch				
154	Bertha	0.15	188.755	4.758	0.0461	0.0027	7.530	0.090	188.647	0.0483	C		C			C	Cb
156	Xanthippe	0.15	110.718	2.187	0.0504	0.0120	8.310	-0.120	110.409	0.0687	C	C	Ch			Caa	Ch
159	Aemilia	0.15	127.434	2.714	0.0614	0.0100	8.100	0.090	127.300	0.0627	C	C	Ch				
163	Erigone	0.04	81.579	3.062	0.0330	0.0043	9.480	-0.040	81.611	0.0428	C	C	Ch				
166	Rhodope	0.15	54.551	1.535	0.0657	0.0145	9.750	0.090	54.564	0.0747	CXG	GC:	Xe			X	Xk
187	Lamberta	0.15	133.014	2.497	0.0642	0.0101	7.980	-0.040	132.457	0.0647	C	C	Ch				

Table 4: *cont.*

Asteroid		*WISE*					H	G	Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V			D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
189	Phthia	0.15	40.559	0.394	0.1991	0.0244	9.600	0.230	40.381	0.1566	S	S	Sa				
201	Penelope	0.24	88.092	2.792	0.0967	0.0060	8.540	0.170	87.720	0.0881	MX	M	X	Xk			
211	Isolda	0.12	143.000	21.629	0.0603	0.0177	7.900	0.120	142.986	0.0598	C	C	Ch				
216	Kleopatra	0.29	138.000	19.374	0.1111	0.0336	7.350	0.280	137.794	0.1068	MX	M	Xe	Xe			
218	Bianca	0.32	56.766	1.072	0.1972	0.0432	8.607	0.310	56.735	0.1979	S	S					
219	Thusnelda	0.15	38.078	0.935	0.2280	0.0202	9.340	0.230	38.279	0.2214	SL	S				S	L
226	Weringia	0.15	37.003	0.389	0.1527	0.0107	9.820	0.230	37.154	0.1510	S		S	S		S	Sk
230	Athamantis	0.27	109.000	13.025	0.1710	0.0762	7.346	0.272	109.025	0.1713	S	S	Sl				
236	Honoria	0.02	92.319	2.085	0.1109	0.0173	8.188	-0.020	92.168	0.1104	SL	S	L	L			
261	Prymno	0.19	54.245	1.354	0.1006	0.0268	9.440	0.190	54.244	0.1005	BX	B	X				
266	Aline	0.15	109.000	18.327	0.0597	0.0204	8.490	0.090	108.867	0.0599	C	C	Ch	Ch		Caa	Ch
288	Glauke	0.15	32.100	1.809	0.1722	0.0352	10.000	0.230	32.245	0.1699	S	S	S	S			
317	Roxane	0.15	19.859	0.124	0.5252	0.0787	10.070	0.490	20.410	0.3975	EX	E	Xe				
322	Phaeo	0.15	73.155	0.000	0.0771	0.0000	8.990	0.090	73.123	0.0837	XD	X	X	D			
335	Roberta	0.15	89.703	1.491	0.0588	0.0113	8.860	0.130	89.734	0.0627	BFP	FP	B				
338	Budrosa	0.15	65.783	0.505	0.1646	0.0277	8.370	0.230	66.350	0.1800	MX	M	Xk				
344	Desiderata	0.15	125.970	1.377	0.0652	0.0183	8.030	0.090	125.870	0.0684	C	C					
345	Tercidina	0.10	99.000	11.469	0.0591	0.0120	8.810	0.210	99.109	0.0538	C	C	Ch	Ch			
346	Hermentaria	0.15	91.810	1.424	0.2949	0.0657	7.250	0.230	91.912	0.2632	S	S	S	S			
347	Pariana	0.15	51.000	3.218	0.2130	0.0414	8.890	0.210	50.955	0.1891	M	M					
379	Huenna	0.15	87.472	2.359	0.0654	0.0079	8.990	0.140	87.336	0.0587	CB	B	C				
388	Charybdis	0.07	124.202	2.315	0.0427	0.0070	8.580	0.070	124.195	0.0423	C	C	C			X	X
392	Wilhelmina	0.15	68.930	0.545	0.0542	0.0100	9.590	0.090	68.854	0.0543	C		Ch				
423	Diotima	0.15	177.254	6.297	0.0664	0.0049	7.320	0.090	177.011	0.0665	C	C	C				
429	Lotis	0.15	70.000	6.683	0.0425	0.0141	9.890	0.070	69.888	0.0400	C	C				X	Xk
453	Tea	0.15	26.139	0.398	0.1182	0.0162	10.850	0.230	26.223	0.1174	S	S	S	Sw			
464	Megaira	0.15	78.294	0.000	0.0421	0.0000	9.470	0.090	78.293	0.0469	CFX	FXU:	C				
478	Tergeste	0.15	77.252	1.447	0.1902	0.0282	7.960	0.230	77.714	0.1914	SL	S	L				
482	Petrina	0.15	62.585	0.801	0.1320	0.0096	8.910	0.230	62.686	0.1227	S	S					
486	Cremona	0.15	19.007	0.238	0.1640	0.0199	10.880	0.230	19.317	0.2105	-						
488	Kreusa	0.15	150.000	11.326	0.0590	0.0224	7.800	0.090	149.833	0.0597	C	C				Caa	Ch
505	Cava	0.03	105.000	4.488	0.0576	0.0232	8.640	0.010	104.935	0.0561	CF	FC					
519	Sylvania	0.15	43.944	0.524	0.2020	0.0423	9.180	0.230	44.114	0.1931	S	S	S				
539	Pamina	0.15	43.724	0.359	0.1218	0.0149	10.040	0.090	43.361	0.0905	C		Ch			Caa	Ch
540	Rosamunde	0.15	20.274	0.118	0.2241	0.0519	10.740	0.230	20.368	0.2154	S	S					
542	Susanna	0.15	52.501	0.248	0.1158	0.0274	9.640	0.240	52.372	0.0897	S	S					
556	Phyllis	0.15	38.517	0.409	0.1787	0.0329	9.520	0.200	38.688	0.1836	S	S	S				
558	Carmen	0.15	58.572	0.000	0.1170	0.0000	9.170	0.210	58.632	0.1104	M	M				X	Xk
560	Delila	0.15	35.078	0.193	0.0627	0.0118	10.800	0.090	35.070	0.0687	B	***	B				
584	Semiramis	0.24	48.693	4.261	0.2444	0.0600	8.610	0.310	49.263	0.2618	S	S	Sl				
587	Hypsipyle	0.15	12.944	0.103	0.1413	0.0237	12.190	0.230	12.991	0.1392	-						
593	Titania	0.06	86.485	2.010	0.0458	0.0049	9.290	0.060	86.479	0.0454	C	C					
606	Brangane	0.15	36.907	0.744	0.0893	0.0116	10.200	0.090	36.960	0.1075	SLDTK	TSD	K	L			
622	Esther	0.15	29.000	5.417	0.1736	0.0621	10.240	0.230	29.104	0.1672	S	S	S				

Table 4: *cont.*

Asteroid		*WISE*					H	G	Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V			D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
674	Rachele	0.15	96.002	2.112	0.2064	0.0328	7.472	0.239	96.392	0.1951	S	S	S				
695	Bella	0.15	41.225	0.600	0.2449	0.0281	9.070	0.200	41.396	0.2427	S	S					
712	Boliviana	0.03	127.576	3.737	0.0389	0.0051	8.330	0.030	127.806	0.0503	CX	C	X				
722	Frieda	0.15	8.835	0.044	0.3309	0.0429	12.310	0.230	8.794	0.2721	S				S		
728	Leonisis	0.15	7.267	0.068	0.2557	0.0272	13.000	0.230	7.245	0.2123	AL					A	Ld
739	Mandeville	0.15	103.713	2.286	0.0514	0.0086	8.760	0.090	103.604	0.0516	X	X	X	Xc		X	X
770	Bali	0.15	19.166	0.182	0.1732	0.0394	11.110	0.160	19.176	0.1728	S	S					
776	Berbericia	0.34	151.113	4.099	0.0655	0.0077	7.632	0.140	150.522	0.0690	C	C	Cgh	Cgh			
779	Nina	0.15	77.000	6.578	0.1740	0.0559	8.100	0.260	77.456	0.1694	X		X			X	X
782	Montefiore	0.15	14.541	0.099	0.2134	0.0286	11.560	0.230	14.578	0.1976	S	S	Sl	Sw			
795	Fini	0.15	62.649	2.428	0.0593	0.0103	9.780	0.120	62.562	0.0553	C		C				
823	Sisigambis	0.15	15.755	0.043	0.2339	0.0292	11.370	0.230	15.742	0.2018	-						
825	Tanina	0.15	14.611	0.068	0.1537	0.0333	11.840	0.230	14.667	0.1508	S	SR	S				
849	Ara	0.15	84.417	2.447	0.1155	0.0163	8.330	0.210	84.615	0.1149	M	M					
851	Zeissia	0.15	13.566	0.106	0.2191	0.0225	11.600	0.230	13.649	0.2172	S	S					
852	Wladilena	0.15	31.087	0.278	0.1597	0.0184	10.150	0.140	31.067	0.1594	-						
853	Nansenia	0.15	30.737	0.314	0.0323	0.0027	11.690	0.090	30.755	0.0394	CXD	XD	Ch				
901	Brunsia	0.15	14.721	0.108	0.1888	0.0330	11.610	0.230	14.784	0.1834	S	S					
905	Universitas	0.15	13.703	0.090	0.2188	0.0619	11.660	0.090	13.605	0.2068	S		S				
920	Rogeria	0.15	29.683	0.260	0.0670	0.0030	11.285	0.240	29.706	0.0613	DT	DTU					
925	Alphonsina	0.15	58.000	4.841	0.2533	0.0534	8.410	0.230	58.062	0.2266	S	S	S	S			
929	Algunde	0.15	12.440	0.073	0.2348	0.0327	11.860	0.240	12.448	0.2055	S		S	S		S	Sl
968	Petunia	0.15	28.983	0.263	0.1657	0.0703	10.250	0.230	29.123	0.1654	S	S				S	Sl
980	Anacostia	0.06	95.568	1.195	0.1404	0.0125	7.855	0.060	95.553	0.1395	SL	SU	L				
1060	Magnolia	0.15	7.110	0.117	0.2922	0.0328	12.710	0.230	7.160	0.2839	S					S	S
1078	Mentha	0.15	13.660	0.134	0.1819	0.0375	11.900	0.230	13.675	0.1641	S	S					
1083	Salvia	0.15	10.183	0.000	0.1945	0.0000	12.250	0.230	10.283	0.2103	-						
1088	Mitaka	0.15	15.957	0.030	0.1588	0.0204	11.620	0.230	16.016	0.1549	S	S	S				
1103	Sequoia	0.15	7.623	0.058	0.3044	0.0439	12.530	0.420	7.816	0.2813	EX	E	Xk				
1117	Reginita	0.15	10.193	0.250	0.3585	0.0785	11.690	0.230	10.292	0.3516	S					S	S
1123	Shapleya	0.15	11.939	0.000	0.2642	0.0000	11.590	0.230	12.084	0.2797	S					S	S
1338	Duponta	0.15	7.875	0.062	0.2286	0.0274	12.798	0.200	7.885	0.2159	-						
1367	Nongoma	0.15	9.313	0.048	0.2470	0.0271	12.300	0.230	9.371	0.2418	SL					S	L
1376	Michelle	0.15	7.053	0.119	0.2669	0.0578	12.810	0.230	7.104	0.2630	-						
1405	Sibelius	0.15	7.175	0.089	0.3516	0.0646	12.570	0.240	7.204	0.3191	-						
1419	Danzig	0.15	14.059	0.096	0.2388	0.0462	11.450	0.230	14.139	0.2324	-						
1429	Pemba	0.15	10.417	0.000	0.1709	0.0000	12.740	0.230	10.371	0.1316	-						
1472	Muonio	0.15	8.388	0.110	0.2397	0.0786	12.620	0.240	8.421	0.2230	-						
1629	Pecker	0.15	9.297	0.036	0.2618	0.0344	12.360	0.240	9.310	0.2318	S		S				
1644	Rafita	0.15	15.443	0.000	0.1392	0.0000	11.860	0.230	15.482	0.1329	S	S					
1665	Gaby	0.15	10.960	0.021	0.2681	0.0736	11.900	0.230	11.009	0.2532	S	S				S	Sq
1689	Floris-Jan	0.15	16.122	4.950	0.1271	0.0508	11.740	0.230	16.213	0.1353						D	D
1717	Arlon	0.15	9.128	0.166	0.2492	0.0420	12.430	0.240	9.150	0.2250	S	S					
1718	Namibia	0.15	9.747	0.112	0.0740	0.0095	13.800	0.050	9.694	0.0568	-						

Table 4: *cont.*

Asteroid		*WISE*					H	G	Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V			D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
1722	Goffin	0.15	10.446	0.130	0.2191	0.0165	12.180	0.150	10.442	0.2175	S				S		
1736	Floirac	0.15	8.701	0.119	0.2994	0.0420	12.330	0.240	8.729	0.2711	-						
1777	Gehrels	0.15	12.486	0.228	0.2212	0.0170	11.773	0.343	12.667	0.2151	S		Sq				
1806	Derice	0.15	10.697	0.061	0.2474	0.0669	12.140	0.240	10.700	0.2149	S					S	Sl
1830	Pogson	0.15	8.284	0.116	0.2361	0.0396	12.659	0.291	8.350	0.2188	S	S	S				
1865	Cerberus	0.15	1.611	0.013	0.1360	0.0210	16.965	0.232	1.608	0.1118	S	S	S				
1866	Sisyphus	0.15	6.597	0.189	0.2550	0.0490	12.510	0.235	6.859	0.3719	S		S	Sw			
1967	Menzel	0.15	10.138	0.092	0.2279	0.0397	12.250	0.240	10.182	0.2145	S				S		
1979	Sakharov	0.15	4.521	0.000	0.3574	0.0000	13.800	0.340	4.512	0.2620	-						
1980	Tezcatlipoca	0.15	5.988	0.000	0.1373	0.0000	13.960	0.230	5.998	0.1279	SA	SU	Sl	Sw		A	A
1991	Darwin	0.15	4.989	0.371	0.2577	0.0777	13.600	0.230	5.024	0.2541	-						
2002	Euler	0.15	19.773	0.057	0.0416	0.0062	12.700	0.240	19.780	0.0375	-						
2006	Polonskaya	0.15	4.625	0.163	0.3539	0.0955	13.350	0.420	4.804	0.3498	-						
2049	Grietje	0.15	2.457	0.126	0.1684	0.0316	15.600	0.420	2.495	0.1633	-						
2094	Magnitka	0.15	12.053	0.055	0.1278	0.0129	12.490	0.400	12.167	0.1204	-						
2110	Moore-Sitterly	0.15	5.699	0.000	0.1649	0.0000	13.620	0.240	5.765	0.1894	-						
2121	Sevastopol	0.15	9.318	0.037	0.2475	0.0223	12.480	0.290	9.337	0.2064	S					S	Sl
2212	Hephaistos	0.15	5.536	0.044	0.1630	0.0270	13.525	0.230	5.636	0.2163	SG	SG					
2478	Tokai	0.15	9.982	0.031	0.2084	0.0371	12.370	0.330	10.087	0.1957	S		S			S	Sl
2486	Metsahovi	0.15	8.417	0.034	0.2321	0.0232	12.782	0.240	8.401	0.1929	-						
2501	Lohja	0.15	11.822	0.072	0.1898	0.0440	12.155	0.234	11.843	0.1731	A	A	A	A			
2544	Gubarev	0.15	9.261	0.290	0.2476	0.0273	12.350	0.240	9.308	0.2341	-						
2642	Vesale	0.15	9.541	0.053	0.2044	0.0224	12.450	0.230	9.592	0.2010	-						
2659	Millis	0.15	27.878	0.337	0.0498	0.0028	11.650	0.090	27.849	0.0498	B		B				
2794	Kulik	0.15	7.622	0.088	0.1238	0.0247	13.480	0.230	7.647	0.1225	-						
2815	Soma	0.15	7.158	0.088	0.3207	0.0411	12.980	0.240	7.067	0.2273	S					S	S
2830	Greenwich	0.15	9.197	0.064	0.1846	0.0451	12.610	0.230	9.252	0.1865	S	S					
2886	Tinkaping	0.15	5.784	0.053	0.2574	0.0217	13.280	0.230	5.825	0.2538	-						
2897	Ole Romer	0.15	5.231	0.113	0.2827	0.0679	13.640	0.240	5.209	0.2278	-						
2943	Heinrich	0.15	7.668	0.046	0.2295	0.0291	12.820	0.240	7.712	0.2212	-						
2954	Delsemme	0.15	5.030	0.037	0.2590	0.0484	13.580	0.230	5.065	0.2547	-						
3066	McFadden	0.15	14.805	0.051	0.2617	0.0766	11.240	0.230	14.896	0.2541	SL					S	L
3116	Goodricke	0.15	7.856	0.107	0.2574	0.0267	12.620	0.230	7.909	0.2528	S					S	Sl
3121	Tamines	0.15	6.059	0.132	0.2101	0.0552	13.460	0.300	6.107	0.1956	S		S				
3122	Florence	0.15	4.401	0.030	0.2310	0.0490	14.515	0.266	4.349	0.1460	S		S	Sqw			
3376	Armandhammer	0.15	8.168	0.098	0.2761	0.0356	12.540	0.240	8.199	0.2533	S		Sq				
3554	Amun	0.15	3.332	0.000	0.0775	0.0000	15.870	0.260	3.337	0.0712	-						
3576	Galina	0.15	7.802	0.074	0.1675	0.0310	13.200	0.240	7.815	0.1518	S		Sl				
3673	Levy	0.15	6.412	0.159	0.2472	0.0325	13.140	0.280	6.468	0.2341	-						
3691	Bede	0.15	1.803	0.105	0.5930	0.1200	15.220	0.430	1.827	0.4323	Xc		Xc				
3752	Camillo	0.15	2.306	0.088	0.2100	0.0360	15.410	0.230	2.328	0.2234	-						
3824	Brendalee	0.15	5.183	0.107	0.2570	0.0413	13.520	0.230	5.219	0.2534	S		S				
3868	Mendoza	0.15	9.351	0.049	0.1621	0.0288	12.710	0.220	9.396	0.1649	-						
3888	Hoyt	0.15	6.659	0.045	0.4011	0.0899	13.260	0.240	6.430	0.2122	S					S	Sq

Table 4: *cont.*

Asteroid		*WISE*					H	G	Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V			D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
3896	Pordenone	0.15	20.001	0.104	0.1341	0.0102	11.610	0.240	19.930	0.1009	-						
3918	Brel	0.15	6.262	0.129	0.2894	0.0182	13.030	0.240	6.299	0.2732	-						
3928	Randa	0.15	5.733	0.175	0.2572	0.0392	13.650	0.240	5.686	0.1894	-						
3982	Kastel'	0.15	6.790	0.363	0.2010	0.0310	13.350	0.510	6.901	0.1695	-						
4029	Bridges	0.15	7.897	0.000	0.2063	0.0000	12.960	0.240	7.910	0.1848	-						
4197	1982 TA	0.15	3.043	0.156	0.2760	0.0770	14.800	0.010	2.981	0.2389	S		Sq	Sq			
4285	Hulkower	0.15	7.787	0.119	0.2092	0.0225	12.960	0.240	7.804	0.1898	-						
4483	Petofi	0.15	5.545	0.030	0.2150	0.0575	13.570	0.420	5.653	0.2063						X	X
4533	Orth	0.15	7.526	0.094	0.2369	0.0342	13.140	0.370	7.529	0.1728	S					S	S
4555	1987 QL	0.15	3.126	0.111	0.3641	0.0623	14.280	0.300	3.174	0.3403	-						
4638	Estens	0.15	4.595	0.404	0.2101	0.0617	13.950	0.240	4.635	0.2163	-						
4666	Dietz	0.15	6.827	0.294	0.2391	0.0655	13.160	0.240	6.826	0.2064						D	D
4674	Pauling	0.15	4.684	0.046	0.3872	0.0810	14.245	0.330	4.520	0.1733	-						
4786	Tatianina	0.15	3.282	0.197	0.5136	0.1593	13.718	0.460	3.475	0.4763	Xc		Xc				
4951	Iwamoto	0.15	5.515	0.033	0.1859	0.0324	13.740	0.190	5.528	0.1844	S		S				
5080	Oja	0.15	8.377	0.000	0.1818	0.0000	13.010	0.240	8.377	0.1573	-						
5129	Groom	0.15	8.189	0.109	0.2922	0.0508	13.060	0.160	7.974	0.1659	-						
5143	Heracles	0.15	4.843	0.378	0.2270	0.0540	14.270	0.420	4.833	0.1481	QVO		O	Q	V		
5313	Nunes	0.15	5.457	0.233	0.2839	0.0316	13.780	0.240	5.378	0.1878	-						
5342	Le Poole	0.15	5.194	0.281	0.2607	0.0440	14.120	0.240	5.101	0.1527	-						
5440	Terao	0.15	5.711	0.020	0.1814	0.0144	13.770	0.240	5.726	0.1673	-						
5451	Plato	0.15	8.703	0.206	0.0534	0.0098	14.580	0.240	8.680	0.0345	-						
5477	Holmes	0.15	3.147	0.137	0.3100	0.0380	14.445	0.390	3.215	0.2849	-						
5484	Inoda	0.15	10.524	0.037	0.0944	0.0145	13.170	0.240	10.535	0.0859	-						
5645	1990 SP	0.15	1.668	0.018	0.1210	0.0220	17.240	0.000	1.648	0.0827	-						
5653	Camarillo	0.15	1.537	0.016	0.2710	0.0570	16.420	0.240	1.526	0.2052	-						
5736	Sanford	0.15	5.060	0.105	0.2504	0.0348	14.170	0.240	4.981	0.1529	-						
5905	Johnson	0.15	4.791	0.065	0.1939	0.0278	14.255	0.330	4.797	0.1524	-						
5985	1942 RJ	0.15	6.212	0.255	0.1944	0.0259	13.530	0.240	6.225	0.1765	-						
6084	Bascom	0.15	6.347	0.218	0.2197	0.0299	13.290	0.260	6.388	0.2091	S					S	S
6178	1986 DA	0.15	3.199	0.207	0.1610	0.0340	15.900	0.200	3.149	0.0778	-						
6185	1987 YD	0.15	9.930	0.000	0.0755	0.0000	13.480	0.240	9.947	0.0724	-						
6361	1978 VL11	0.15	3.714	0.000	0.4099	0.0000	13.860	0.240	3.724	0.3639	-						
6405	Komiyama	0.15	6.529	0.120	0.2626	0.0509	13.430	0.240	6.453	0.1801	-						
6453	1991 NY	0.15	8.520	0.329	0.0883	0.0176	13.810	0.240	8.513	0.0729	-						
6455	1992 HE	0.15	4.626	0.407	0.2270	0.0510	14.215	0.340	4.625	0.1701	S		S	Srw			
6708	Bobbievaile	0.15	9.226	0.021	0.1031	0.0203	13.290	0.240	9.249	0.0997	-						
6949	Zissell	0.15	8.184	0.058	0.0747	0.0052	14.000	0.240	8.187	0.0662	-						
7020	Yourcenar	0.15	9.061	0.121	0.0712	0.0077	14.290	0.240	9.019	0.0418	-						
7030	Colombini	0.15	6.529	0.479	0.0740	0.0079	14.480	0.240	6.533	0.0668	-						
7033	1994 WN2	0.15	4.741	0.121	0.2184	0.0676	14.000	0.240	4.750	0.1966	-						
7043	Godart	0.15	5.721	0.136	0.2250	0.0417	13.490	0.330	5.788	0.2118	-						
7089	1992 FX1	0.15	5.011	0.055	0.3085	0.0270	14.050	0.240	4.898	0.1766	-						
7116	Mentall	0.15	7.412	0.048	0.1524	0.0277	13.540	0.240	7.398	0.1238	-						

Table 4: *cont.*

Asteroid		*WISE*							Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V	H	G	D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
7225	Huntress	0.15	6.680	0.224	0.1650	0.0163	13.490	0.360	6.748	0.1558	S		S				
7229	Tonimoore	0.15	4.840	0.235	0.0434	0.0082	15.600	0.230	4.846	0.0433	-						
7735	Scorzelli	0.15	6.719	0.150	0.4704	0.0735	13.100	0.120	6.371	0.2504	-						
8033	1992 FY1	0.15	6.498	0.059	0.1581	0.0150	13.640	0.240	6.512	0.1457	-						
8116	Jeanperrin	0.15	4.773	0.075	0.1859	0.0353	14.050	0.230	4.797	0.1841	-						
8195	1993 UC1	0.15	8.137	0.170	0.2043	0.0203	12.900	0.240	8.152	0.1839	-						
8338	Ralhan	0.15	4.791	0.210	0.3359	0.0711	14.020	0.240	4.680	0.1988	-						
8356	Wadhwa	0.15	6.745	0.310	0.2945	0.0822	13.070	0.240	6.707	0.2323	-						
9260	Edwardolson	0.15	4.115	0.362	0.2620	0.0369	14.540	0.240	4.052	0.1643	-						
9556	Gaywray	0.15	6.587	0.070	0.2349	0.0547	13.710	0.240	6.482	0.1379	-						
9617	Grahamchapman	0.15	2.840	0.382	0.2445	0.0393	14.970	0.240	2.849	0.2237	-						
9782	Edo	0.15	6.012	0.113	0.2133	0.0211	13.480	0.240	6.031	0.1969	-						
9948	1990 QB2	0.15	3.345	0.717	0.2502	0.0931	14.620	0.240	3.351	0.2232	-						
10123	Fideoja	0.15	3.476	0.518	0.4414	0.0940	14.530	0.240	3.350	0.2426	-						
10188	Yasuoyoneda	0.15	5.407	0.195	0.2193	0.0350	14.030	0.240	5.355	0.1505	-						
10208	Germanicus	0.15	3.552	0.202	0.2667	0.0266	14.790	0.240	3.503	0.1747	-						
10484	Hecht	0.15	4.623	0.552	0.2276	0.0603	14.180	0.240	4.601	0.1776	-						
11072	Hiraoka	0.15	9.083	0.041	0.0853	0.0247	13.720	0.240	9.074	0.0697	-						
11271	1988 KB	0.15	7.341	0.016	0.1980	0.0358	13.170	0.240	7.350	0.1764	-						
11398	1998 YP11	0.15	1.316	0.349	0.3180	0.0950	16.590	0.290	1.310	0.2381	-						
11500	Tomaiyowit	0.15	0.738	0.006	0.1420	0.0240	18.490	0.190	0.738	0.1304	S		S				
12466	1997 AS12	0.15	4.701	0.260	0.1831	0.0267	14.210	0.240	4.709	0.1649	-						
12923	Zephyr	0.15	2.060	0.013	0.1990	0.0340	15.930	0.240	2.062	0.1764	-						
13144	1995 BJ	0.15	7.773	0.248	0.1682	0.0222	13.400	0.120	7.701	0.1300	-						
13154	Petermrva	0.15	4.170	0.239	0.1523	0.0199	14.600	0.200	4.176	0.1464	-						
15350	Naganuma	0.15	4.357	0.070	0.2563	0.0380	14.160	0.240	4.337	0.2035	-						
15793	1993 TG19	0.15	3.497	0.926	0.1317	0.0916	15.460	0.240	3.482	0.0954	-						
16064	1999 RH27	0.15	4.106	0.592	0.0200	0.0060	16.560	-0.140	4.100	0.0250	-						
16115	1999 XH25	0.15	12.529	0.148	0.0710	0.0144	13.280	0.120	12.482	0.0553	-						
16173	2000 AC98	0.15	3.879	0.122	0.2059	0.0413	14.430	0.270	3.905	0.1958	-						
16403	1984 WJ1	0.15	4.147	0.115	0.3401	0.0193	13.740	0.370	4.238	0.3138	-						
16691	1994 VS	0.15	2.671	0.602	0.2476	0.0448	15.010	0.240	2.690	0.2419	-						
17060	Mikecombi	0.15	5.164	0.382	0.2405	0.0526	14.020	0.240	5.111	0.1667	-						
17470	1991 BX	0.15	11.699	0.373	0.1177	0.0194	13.280	0.120	11.565	0.0644	-						
17479	1991 PV9	0.15	6.352	0.429	0.2298	0.0537	13.640	0.240	6.286	0.1564	-						
17938	Tamsendrew	0.15	3.224	0.119	0.2043	0.0338	14.870	0.240	3.235	0.1902	-						
18096	2000 LM16	0.15	7.356	0.109	0.1185	0.0171	13.960	0.120	7.301	0.0864	-						
18503	1996 PY4	0.15	3.529	0.047	0.4290	0.0331	14.510	0.240	3.408	0.2388	-						
19763	Klimesh	0.15	7.270	0.138	0.1754	0.0464	13.270	0.240	7.291	0.1635	-						
19764	2000 NF5	0.15	1.572	0.071	0.3420	0.0770	16.280	0.300	1.552	0.2256	-						
20031	1992 OO	0.15	4.772	0.037	0.4481	0.0655	13.850	0.240	4.591	0.2417	-						
20932	2258 T-1	0.15	5.234	0.000	0.3276	0.0000	13.780	0.240	5.132	0.2063	-						
21088	1992 BL2	0.15	4.231	0.113	0.2060	0.0490	14.350	0.240	4.232	0.1794	-						
21720	Pilishvili	0.15	3.163	0.150	0.2328	0.0221	15.140	0.240	3.130	0.1585	-						

Table 4: *cont.*

Asteroid		*WISE*					H	G	Revised		Taxon.						
		G	D (km)	δD (km)	p_V	δp_V			D (km)	p_V	(0)	(1)	(2)	(3)	(4)	(5)	(6)
22166	2000 WX154	0.15	4.715	0.280	0.1995	0.0431	15.020	0.240	4.613	0.0815	-						
23971	1998 YU9	0.15	8.152	0.094	0.0410	0.0011	14.570	0.120	8.146	0.0395	-						
23979	1999 JL82	0.15	4.899	0.390	0.2930	0.0772	13.900	0.240	4.842	0.2075	-						
24114	1999 VV23	0.15	4.967	0.170	0.4119	0.0589	13.520	0.240	4.880	0.2898	-						
26045	1582 T-2	0.15	2.078	0.559	0.1959	0.0702	15.840	0.240	2.087	0.1871	-						
26760	2001 KP41	0.15	5.400	0.374	0.0420	0.0100	15.580	0.050	5.387	0.0357	-						
29168	1990 KJ	0.15	4.927	0.343	0.3483	0.0596	13.840	0.240	4.826	0.2207	-						
29292	Conniewalker	0.15	4.581	0.217	0.3674	0.0485	13.590	0.240	4.571	0.3097	-						
32953	1996 GF19	0.15	2.444	0.314	0.3897	0.1191	15.030	0.240	2.417	0.2942	-						
34442	2000 SS64	0.15	4.992	0.074	0.1006	0.0092	14.540	0.120	4.994	0.1082	-						
35389	1997 XO	0.15	4.345	0.000	0.1809	0.0000	14.690	0.120	4.291	0.1276	-						
36492	2000 QW46	0.15	3.373	0.039	0.2461	0.0578	15.045	0.240	3.324	0.1534	-						
40267	1999 GJ4	0.15	1.641	0.053	0.4530	0.0870	16.080	0.500	1.621	0.2487	-						
42314	2001 VQ121	0.15	4.531	0.832	0.1971	0.1531	14.660	0.120	4.454	0.1218	-						
45810	2000 QP32	0.15	2.304	0.308	0.4388	0.0831	15.320	0.240	2.234	0.2635	-						
50822	2000 FH35	0.15	6.744	0.151	0.0740	0.0232	14.620	0.120	6.715	0.0556	-						
51911	2001 QD68	0.15	12.304	0.141	0.0671	0.0145	13.520	0.120	12.246	0.0460	-						
52762	1998 MT24	0.15	6.742	0.190	0.0510	0.0090	14.690	0.000	6.725	0.0520	-						
62112	2000 RM99	0.15	5.331	0.272	0.2058	0.0328	13.880	0.120	5.288	0.1772	-						
64588	2001 XX3	0.15	5.477	0.094	0.1950	0.0276	14.230	0.240	5.416	0.1224	-						
66335	1999 JZ61	0.15	3.392	0.236	0.4637	0.0448	13.900	0.240	3.409	0.4186	-						
68905	2002 JZ104	0.15	1.911	0.472	0.3668	0.1935	15.860	0.240	1.868	0.2293	-						
71200	1999 XT236	0.15	6.610	0.146	0.0584	0.0122	14.885	0.120	6.589	0.0452	-						
74355	1998 WJ12	0.15	4.469	0.380	0.1537	0.0733	14.760	0.240	4.446	0.1115	-						
88188	2000 XH44	0.15	1.371	0.264	0.3740	0.1740	16.530	0.350	1.354	0.2356	-						
88850	2001 SL222	0.15	3.377	0.788	0.0676	0.0485	15.630	0.120	3.387	0.0862	-						
99475	2002 CR118	0.15	3.397	0.605	0.2916	0.1839	15.120	0.240	3.307	0.1446	-						
100111	1993 FA51	0.15	6.098	0.198	0.0571	0.0089	15.040	0.120	6.082	0.0460	-						
103067	1999 XA143	0.15	1.282	0.029	0.2460	0.0530	16.990	0.240	1.270	0.1751	-						
105612	2000 RT99	0.15	5.507	0.329	0.1604	0.0309	14.450	0.240	5.454	0.0985	-						
113846	2002 TV239	0.15	2.761	0.738	0.0638	0.0730	16.930	0.240	2.751	0.0395	-						
139345	2001 KA67	0.15	3.101	0.139	0.0380	0.0080	17.060	0.240	3.097	0.0276	-						
159669	2002 GY73	0.15	5.188	0.159	0.0498	0.0143	15.530	0.120	5.176	0.0405	-						
206079	2002 RU66	0.15	3.987	0.831	0.1218	0.0433	15.120	0.120	3.965	0.1006	-						
206400	2003 SW52	0.15	3.257	0.773	0.0418	0.0189	17.020	0.240	3.249	0.0260	-						
232067	2001 UR220	0.15	4.750	0.000	0.0655	0.0000	15.340	0.120	4.740	0.0575	-						
	2005 TQ27	0.15	3.969	0.139	0.0776	0.0159	15.690	0.120	3.952	0.0599	-						

The *WISE* data were taken from http://wise2.ipac.caltech.edu/staff/bauer/NEOWISE_pass1/, file WISE_MBA_Pass1_Table_2011-09-16.txt, and from http://iopscience.iop.org/0004-637X/743/2/156/fulltext/, file apj408731t1_mrt.txt. For some objects that were observed at multiple epochs, they present each epoch as a separate row in their table; we use weighted means for D and p_V from the multiple entries, with the weights of ("dia_err")$^{-2}$ and ("pV_err")$^{-2}$, respectively, where "dia_err" and "pV_err" are their listed uncertainties for the individual entries. The H and G data were taken from Table 2. The revised diameters and albedos were made from the *WISE* estimates using the H, G data and applying the recalculation method of Harris and Harris (1997) as described in Section 4. The taxonomy data were taken from Tholen (1989), Bus and Binzel (2002), DeMeo et al. (2009), Xu et al. (1995), and Lazzaro et al. (2004), as compiled in Neese (2010); they are given in columns Taxon.(1) to (6) in the respective order (the last two columns are the data from Lazzaro et al., 2004, in the Tholen and the Bus&Binzel system, respectively). Column Taxon.(0) gives a "summary" of the taxonomic classifications; it is the union of capital letters from columns Taxon.(1) to (4) and the S/A/L classification from columns Taxon.(5) and (6).