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ABSTRACT

Context.

Aims.

Methods.

Results.

Conclusions.

Key words. Minor planets, asteroids: general – Earth – Celestial mechanics

Tab. 1

Table 1. List of 146 new families (not included in Nesvorný et al. 2015) identified in the new proper elements catalogue.

num.	family	notes
<i>inner belt</i> ($a < 2.5$ au)		
6	Hebe	compact, depleted, S-type
40	Harmonia	extended, offset, S-type
67	Asia	to the right of Vesta, S-type
115	Thyra	compact, S-type
135	Hertha	in Nysa, BIG
345	Tercidina	diffuse, extended in a, S-type
1598	Paloque	above Vesta, compact, big bodies, C-type
1663	van der Bos	in Flora, diffuse, uncertain, slow-rotator
1963	Bezovec	in Phocaea, diffuse, offset
2110	Moore-Sitterly	very compact, S-type
2328	Robeson	compact, C-type
2728	Yatskiv	in Polana, compact, C-type
2653	Principia	below Vesta, compact, S-type
2823	van der Laan	to the left of Sulamitis, S-type, offset
2961	Katsurahama	in Flora, small
3452	Hawke	diffuse, depleted, C-type, 317?
6084	Bascom	in Phocaea, very small
6065	Chesneau	in Phocaea, diffuse, 587?
6142	Tantawi	in Polana, compact
18429	1994 AO1	compact
41331	1999 XB232	in Phocaea, very small
61203	Chleborad	in Vesta, compact, close to 3:1
70208	1999 RX33	in Phocaea, very small
118564	2000 FO47	in Nysa, compact, S-type
484743	2008 YL101	very compact
?	2012 PM61	in Vesta, compact, only small bodies
<i>middle belt</i> (2.5 au $< a < 2.82$ au)		
28	Bellona	numerous small bodies
45	Eugenia	2 satellites, small bodies, diffuse, C-type
177	Irma	diffuse, K-TYPE?
194	Prokne	offset, above
237	Coelestina	small, S-type
240	Vanadis	below Misa, small, C-type, another at 4801?
342	Endymion	very small, close to Konig, C-type
351	Irsa	small bodies, S-type
389	Industria	BIG, S-type, offset
424	Gratia	diffuse, C-type
446	Aeternitas	BIG, compact
539	Pamina	diffuse, C-type, offset
593	Titania	small, C-type
660	Crescentia	in Maria, BIG, 6458?
727	Nipponia	below Maria, compact, C-type
801	Helwerthia	big bodies, compact, C-type
1048	Fedosia	compact, C-type
1127	Mimi	small, C-type, offset
1160	Illyria	in Maria, diffuse
1347	Patria	compact, C-type, offset
2079	Jacchia	in Eunomia, diffuse
2927	Alamosa	very small
3324	Avsyuk	offset, above, S-type
3497	Innanen	small, C-type
3567	Alvema	extended, C-type
4613	Mamoru	diffuse, unknown
5798	Burnett	S-type, 26170?
7233	Majella	very small
7403	Choustnik	small, offset, C-type
8223	Bradshaw	very small, C-type
9332	1990 SB1	in Eunomia, extremely compact, low number of bodies
10164	Akusekijima	very small
12586	Shukla	very small, S-type
15104	2000 BV3	small, C-type
16940	1998 GC3	in Eunomia, diffuse
21591	1998 TA6	in Eunomia, compact
22766	1999 AE7	very compact
26170	Kazuhiko	very compact, S-type
30718	Records	diagonal, C-type
32983	1996 WU2	in Eunomia, small
42357	2002 CS52	compact, S-type
49362	1998 WW16	offset, S-type, 168622?
49714	1999 VP34	diffuse, S-type, offset
53209	1999 CQ75	small, C-type
54934	2001 OH105	only small bodies
190237	2007 DM10	small
249576	1995 FH2	diffuse, C-type
435544	2008 OV23	in Eunomia, compact, only small bodies
?	2006 QX49	very compact

Table 1. cont.

num.	family	notes
<i>pristine zone</i> (2.82 au $< a < 2.96$ au)		
174	Phaedra	diffuse, S-type
392	Wilhelmina	compact, C-type
924	Toni	compact, C-type
1334	Lundmarka	BIG, diffuse, S-type, offset, 36256?
4471	Graculus	small, S-type
15454	1998 YB3	large bodies, C-type
16472	1990 OE5	in Dora, compact, C-type
26369	1999 CG62	very small, C-type
31810	1999 NR38	diffuse, S-type
77873	2001 SQ46	very small, C-type
78225	2002 OS10	diffuse
211772	2004 BQ90	diffuse, C-type
217472	2005 WV105	very small
<i>outer belt</i> ($a > 2.96$ au)		
52	Europa	C-type
106	Dione	3136?
260	Huberta	extended, also big bodies, C-type
286	Iclea	compact, C-type
321	Florentina	"Koronis ₄ ", Brož et al. (2024)
414	Liriope	compact, depleted
537	Pauly	small, depleted, uncertain
561	Ingwelde	in Themis
633	Zelima	in Eos, compact, in z_1 resonance
690	Wratislavia	BIG, C-type
850	Altona	depleted
885	Ulrike	compact, C-type
1289	Kutaisii	"Koronis ₃ ", Brož et al. (2024)
1323	Tugela	above Tirela, BIG, C-type, offset
1357	Khama	compact, C-type
1461	Jean-Jacques	compact, numerous small bodies, M-TYPE?
1524	Joensuu	K-TYPE?
1599	Giomus	in Hygiea
2458	Veniakaverin	in Themis
2562	Chaliapin	in Eos, diffuse
3310	Patsy	in Eos, compact
3803	Tuchkova	very small, C-type
4897	Tomhamilton	in Eos, offset, diffuse
5228	Maca	in Themis, very small
6924	Fukui	extended, C-type
7504	Kawakita	very small, C-type
8737	Takehiro	offset
9522	Schlichting	only few bodies
12911	Goodhue	in Themis
14384	1990 OH4	uncertain
20674	1999 VT1	very compact, offset
29880	Andytran	in Themis
34216	2000 QK75	very small, C-type
37455	4727 P-L	offset, above, C-type, 60407?
48412	1986 QN1	compact, unknown, uncertain
48506	1993 FO10	to the left of Tirela, C-type
106302	2000 UJ87	extended, C-type, 86 offset due 13:6 resonance!
140987	2001 WS13	in Veritas, a "ray"
157940	1999 XU240	compact, low number of bodies
274049	2007 RK315	only small bodies, C-type
352479	2008 BO31	small
365736	2010 WK8	small, C-type
<i>high-inclination</i> ($\sin i > 0.3$)		
183	Istria	BIG, S-type
350	Ornamenta	in Alauda, BIG, extended, C-type
386	Siegena	extended, C-type
704	Interamnia	offset, cratering?, C-type
754	Malabar	extended, also big bodies, C-type
1312	Vassar	low number of bodies, C-type
1390	Abastumani	small, C-type
3854	George	extended, diffuse, S-type
4291	Kodaihasu	very compact
7605	Cindygraber	small, C-type
63530	2001 PG20	extended, C-type
77899	2001 TS117	very extended, low-density, offset, M-TYPE?
78705	2002 TE180	very compact, S-type
101567	1999 AW22	extended, planar, C-type?
126948	2002 FX3	compact, low number of bodies, C-type
236657	2006 KU114	extended, C-type

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