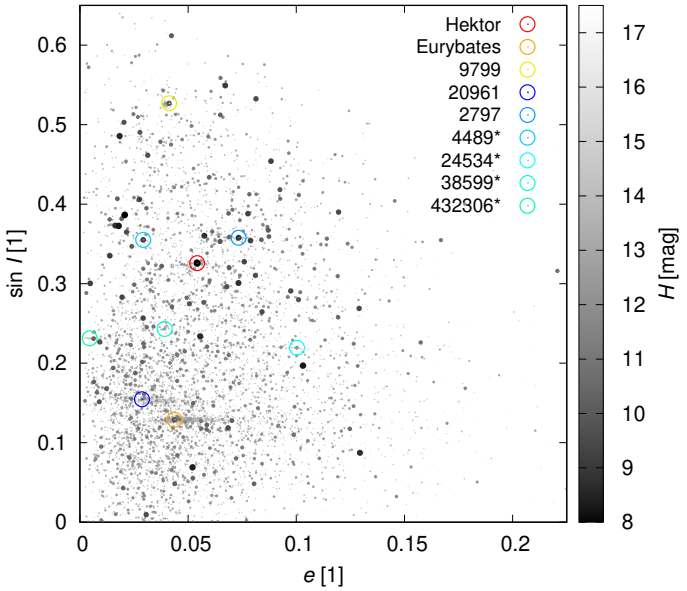

Fig. 1. The proper eccentricity e_p vs. the proper inclination i_p of Greek asteroids in the leading L4 point. The scale of gray and size of symbols are proportional to the absolute magnitude H. Both known and new (*) families are identified (coloured circles).

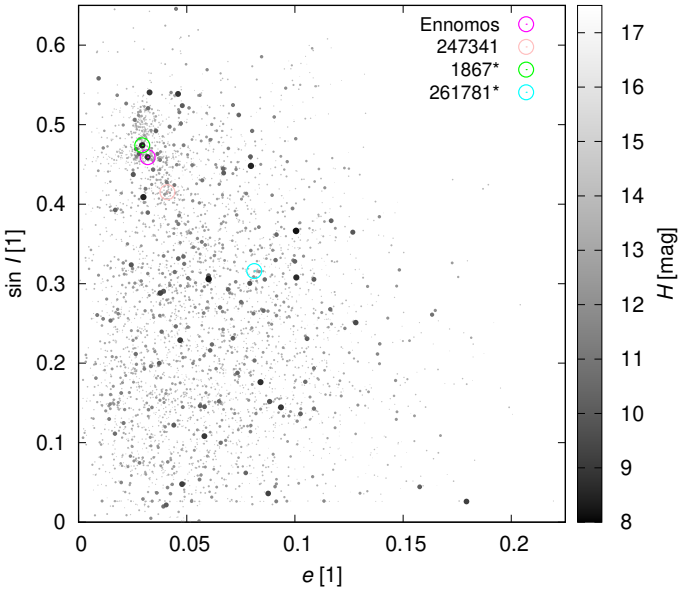

Fig. 2. Same as Fig. 1 for the Trojans in the trailing L5 point.

1. Family identification

we computed the proper elements of the Trojans (Milani 1993; Brož & Rozehnal 2011; Holt et al. 2020) three elements libration amplitude D eccentricity e inclination i where the libration is closely related to variation of the semimajor axis $a - a'$ with respect to Jupiter hierarchical clustering method (Zappalà et al. 1995) with a variable cutoff velocity v_{cut} spatial density higher than the local background relatively steep size-frequency distribution (SFD)

recent orbital catalogues (Apr 2023) Astorb (Moskovitz et al. 2019), also physical data Wise (Nugent et al. 2015), Akari (Usui et al. 2011), Sloan DSS (Parker et al. 2008)

results Tab. 1 Fig. 1 Fig. 2 9 families in L4 3 families in L5 new families several tens of members, compact, composed of mostly small bodies Fig. 3

interesting case of Ennomos possibly, two overlapping families original low inclination and more extended in eccentricity new part high i and less extended in e possibly related to 1867 Deiphobus Ennomos/Deiphobus complex Fig. 4

comparison with Vinogradova (2015, 2020) sometimes different notation (e.g., 20961 vs. 2148) sometimes the proposed body is very offset (e.g., 1172, 2148) the remaining proposed families (9713, 1583, 11487) have similar spatial density as the background missing small asteroids

The number of families in L4 is significantly larger than in L5 (9 vs. 3). missing families in L5 at moderate and low inclinations ($\sin I_p \lesssim 0.3$) low collisional activity relatively low impact speed relatively low number of bodies (8199 vs. 4271)

At least several families (624, 3548, 20961, 4709) with a substantial number of members have a potential to affect the overall distribution of elements.

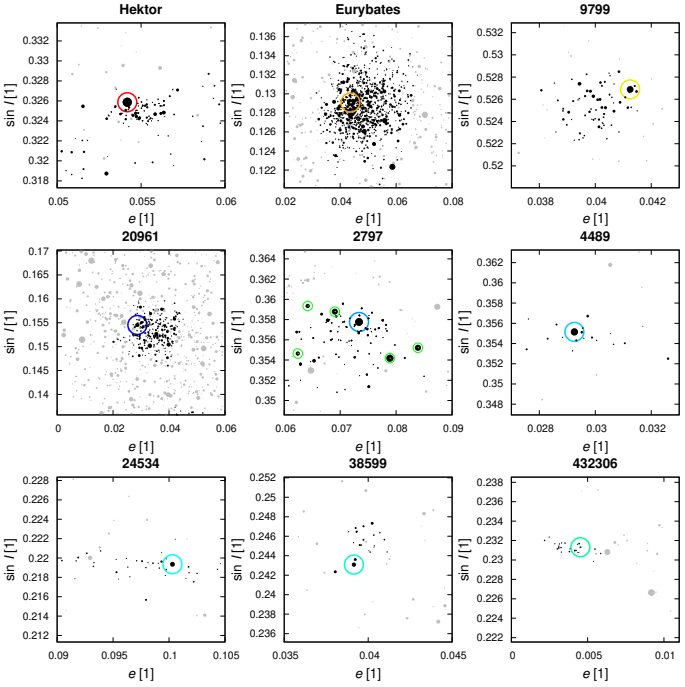

Fig. 3. Same as Fig. 1, but focussed on individual families. Bodies identified as family members (black) and non-members in the surroundings (gray) are plotted. The non-members are often offset in the third dimension (i.e., the semimajor axis a_p).

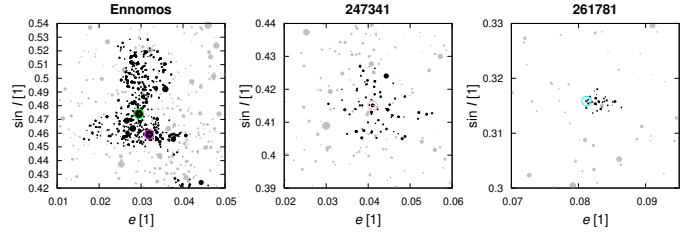

Fig. 4. Same as Fig. 2, but focussed on individual families.

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Table 1. Asteroid families among the Jupiter Trojans (in L4 or L5). New families are indicated by asterix symbols (*). The number of families in L4 is significantly larger than in L5.

number	designation	in	$v_{\rm cut}$	N	$D_{\rm lr}$	$D_{\rm lf}$	$D_{\rm durda}$	notes
–	–	–	m s^{-1}	1	km	km	km	–
624	Hektor	L4	40	118	230	21	250	alternatively, only small bodies at 20 m s^{-1}
3548	Eurybates	L4	40	875	68	53	140	
9799	Thronium	L4	20	69	72	22	120	
20961	Arkesilaos	L4	40	235	23	21	110	2148 in Vinogradova (2020)
2797	Teucer	L4	60	86	113	17	130	Vinogradova (2015)
4489*	Dracius	L4	60	24	95	15		
24534*	2001 CX27	L4	60	45	29	15		
38599*	1999 XC210	L4	60	22	20	12		
432306*	2009 SQ357	L4	40	24	7.3	6.8		4035, 6545 offset in a
4709	Ennomos	L5	50	88	80	20	110	1867 in Vinogradova (2020)
1867*	Deiphobus	L5	60	233	131	24	180	formely, a part of Ennomos
247341	2001 UV209	L5	55	46	18	16	90?	37519 in Vinogradova (2020); 247341 in centre
261781*	2006 BG132	L5	60	31	14	13		1172 offset in e

Notes. The number and designation correspond to the central asteroid, $v_{\rm cut}$ denotes the cutoff velocity, N the number of members, $D_{\rm lr}$ the size of the largest remnant, $D_{\rm lf}$ the size of the largest fragment, $D_{\rm durda}$ the size of the parent body, estimated by the method of Durda et al. (2007).

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