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Verification of the V-type asteroids rotation distribution outside Vesta family

Volodymyr Troianskyi[1,2] and the V-type asteroid team[*]
[1]Astronomical Observatory Institute, Faculty of Physics, A. Mickiewicz University, S{\l}oneczna 36, 60-286 Pozna{\'n}
[2]Astronomical Observatory of Odessa I.I.Mechnikov National University, Marazlievskaya 1v, 65014 Odessa, Ukraine
[*]A full list of authors appears at the end of the abstract

The main objective of the study is the verification of the V-type rotation distribution. Though numerical modelling, Nesvorny et al. (2008) showed that asteroids can migrate through Yarkovsky effect and resonaces outside the boundaries of the Vesta family. In particular they found that objects which end up in the scattered resonances region (so-called Cell I, defined by orbital elements 2.2 AU < a < 2.3 AU, 0.05 < e < 0.2, 0 < i deg < 10 deg) typically have retrograde rotation and thermal parameters that maximize the Yarkovsky drift. Consequently, most of the V-types in Cell I should be retrograde rotating. Similarly showed that asteroids migrating to the low inclination region (Cell II defined by 2.32 AU < a < 2.48 AU, 0.05 < e < 0.2, 2 deg < i < 6 deg) should be predominantly rotating prograde (60% of objects).

We perform photometric observations and determine spins and shapes of V-type objects in Cell I and II to verify the predicted statistics of sense of rotation. Finding significantly un-matching statistics for rotational properties may strengthen the idea that there may be fragments of other (than Vesta) differentiated planetesimals in the inner main belt. We show preliminary results for the first few asteroids in Cell I and II.

V-type asteroid team: Volodymyr Troianskyi (1,2), Dagmara Oszkiewicz (1), D{\'o}ra F{\"o}hring (3), Adri{\'a}n Gal{\'a}d (4), Tomasz Kwiatkowski (1), Anna Marciniak (1), Brian A. Skiff (5), Stefan Geier (6,7), Nicholas A. Moskovitz (5), Pawe\l{} Kankiewicz (8), \v{S}tefan Gajdo\v{s} (4), Jozef Vil{\'a}gi (4), L'udov{\'i}t Pol\v{c}ic (4), Emil Wilawer (1), Volodymyr Kashuba (2), Sergei Udovichenko (2), Leonid Keir (2), Krzysztof Kami\'nski (1), Maxime Devogele (5), Annika Gustafsson (5,9)