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Photometric Observations of Karin Family Asteroids

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We have not expected that the observations of each member of asteroid families allow us to get some information about the impact event which formed them, because the asteroid families are old usually (~ 2 Gyr). However, in 2002, a very young asteroid family, the Karin family, was discovered (Nesvorn´y *et al*. 2002). It has been created by an asteroid breakup event only ~ 5.8 Myr ago. It is possible that the members of this family still preserve properties of the original collision, because the estimated timescales of tumbling motion derived from excitation by an impact and the Yarkovsky effect are enough longer than the age of the Karin family. A part of collisional properties seems to appear in the rotational status of asteroid fragments just after the breakup event. So we intend to grasp the insight of the collisional properties through the observations of their lightcurves. We report here the results of the photometric observation of 12 Karin family asteroids which determined their spin periods; (832) Karin (spin period: 18.35±0.02hr) (Yoshida *et al*. 2004), (4507) 1990FV (6.58±0.04hr), (7719) 1997GT_{36} (29.56 ± 0.60hr), (10783) 1999RB_9 (7.33 ± 0.04hr), (11728) Einer (13.62 ± 0.05hr), (13765) Nansmith (10.51 ± 0.01hr), (16706) Svojsik (6.72±0.07 hr), (28271) 1999CK_{16} (5.64±0.06 hr), (40917) 1999TR_{171} (7.81± 0.08hr), (43032) 1999VR_{26} (32.51 ± 0.04hr), (69880) 1998SQ_{81} (9.14 ± 0.01hr), (71031) 1999XE_{68} (20.19 ± 0.41hr).
Observations of the Karin family asteroids are a unique opportunity to understand an asteroid disruption event. Our observations are still going on.

References

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