

A C-type Super Fast Rotator

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The large (i.e., diameter larger than 0.3 km) super-fast rotators (hereafter, SFRs) are of interest to understand asteroid interior structure. Because asteroids of sub-kilometer in size are believed to have rubble-pile structure (i.e., gravitationally bounded aggregations) and cannot have super-fast rotation (i.e., rotation period is longer than 2.2 hour; Harris 1996). However, the six known SFRs (i.e., diameter > 0.3 km and rotation period < 2 hr) cannot be explained by rubble-pile structure. Moreover, none of them are of C-type asteroids. Therefore, it is important to know whether SFRs have certain taxonomic tendency. We conducted a asteroid rotation period survey with large sky coverage using PS1 in Oct 2016 and discovered a C-type SFR. This indicates that the formation of SFR is not taxonomy-dependent.