# AKARI/AcuA Physical Studies of the Cybele Asteroid Family

KASUGA, Toshihiro (NAOJ)
USUI, Fumihiko, HASEGAWA, Sunao (ISAS/JAXA)
KURODA, Daisuke (NAOJ)
OOTSUBO, Takafumi (Tohoku University)
MÜLLER, Thomas G. (Max-Planck-Institut für Extraterrestrische Physik)
ISHIGURO, Masateru (Seoul National University)

We present a study of 107 Cybele asteroids based on the archival data base "Asteroid Catalog Using *AKARI* (AcuA)" taken by the infrared astronomical satellite. The data base provides diameters $D > 10$ km, geometric albedos and taxonomic informations (75 %) of the Cybeles. We find taxonomic diversity (mainly C-, D- and P-type) in the population of seventy-eight small Cybeles with diameters 10 km $< D <$ 80 km. Their cumulative power-law size distribution index shows a shallow value of $0.86 \pm 0.03$. By contrast, twenty-nine large Cybeles with $D > 80$ km are mostly classified as C- or P- types (90 %), having a power-law index of $2.39 \pm 0.18$. The total mass of Cybele asteroids is estimated to be $\sim 10^{-5}$ $M_{\rm Earth}$. We also discuss the origin and formation process of Cybele asteroid family. See [1] for more details.

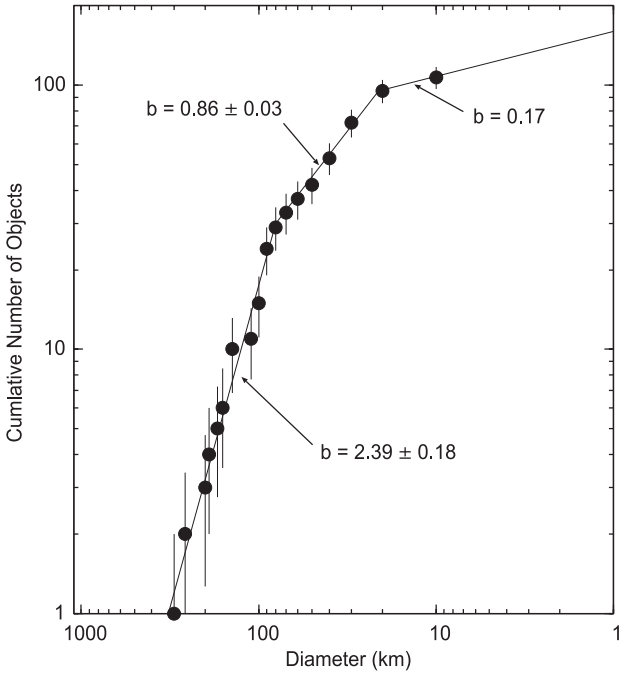


**Figure 1**: Cumulative size distribution of 107 Cybele asteroids. The derived power-law indexes are $b = 0.17$ (10 km $< D <$ 20 km), $0.86 \pm 0.03$ (20 km $< D <$ 80 km) and $2.39 \pm 0.18$ ($D > 80$ km).

## Reference

[1] Kasuga, T., et al.: 2012, *AJ*, **143**, 141.