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SUBMISSION ROLE: Regular DPS Abstract

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TITLE: Irregular Saturnian Moon Lightcurves from Cassini-ISS Observations: Update

ABSTRACT BODY:

Abstract (2,250 Maximum Characters): Cassini ISS-NAC observations of the irregular moons of Saturn revealed various physical information on these objects.
16 synodic rotational periods: Hati (S43): 5.45 h; Mundilfari (S25): 6.74 h; Suttungr (S23): ~7.4 h; Kari (S45): 7.70 h; Siarnaq (S29): 10.14 h; Tarvos (S21): 10.66 h; Ymir (S19, sidereal period): 11.92220 h ± 0.1 s; Skathi (S27): ~12 h; Hyrrokkin (S44): 12.76 h; Ijiraq (S22): 13.03 h; Albiorix (S26): 13.32 h; Bestla (S39): 14.64 h; Bebhionn (S37): ~15.8 h; Kiviuq (S24): 21.82 h; Thrymr (S30): ~27 h; Erriapus (S28): ~28 h. The average period for the prograde-orbiting moons is ~16 h, for the retrograde moons ~11½ h (includes Phoebe's 9.2735 h from Bauer et al., AJ, 2004).
Phase-angle dependent behavior of lightcurves: The phase angles of the observations range from 2° to 105°. The lightcurves which were obtained at low phase (<40°) show the 2-maxima/ 2-minima pattern expected for this kind of objects. At higher phases, more complicated lightcurves emerge, giving rough indications on shapes.
Ymir pole and shape: For satellite Ymir, a convex-hull shape model and the pole-axis orientation have been derived. Ymir's north pole points toward $\lambda = 230° \pm 180°$, $\beta = -85° \pm 10°$, or RA = 100°±20°, Dec = -70°±10°. This is anti-parallel to the rotation axes of the major planets, indicating that Ymir not just orbits, but also rotates in a retrograde sense. The shape of Ymir resembles a triangular prism with edge lengths of ~20, ~24, and ~25 km. The ratio between the longest (~25 km) and shortest axis (pole axis, ~15 km) is ~1.7.
Erriapus seasons: The pole direction of object Erriapus has probably a low ecliptic latitude. This gives this moon seasons similar to the Uranian regular moons with periods where the sun stands very high in the sky over many years, and with years-long periods of permanent night.
Hati density: The rotational frequency of the fastest rotator (Hati) is close to the frequency where the object would lose material from the surface if its bulk density would be less than ~1 g/cm^3. This indicates that at least Hati is probably not an underdense object among Saturn's irregulars.

PRESENTATION TYPE: Oral

CURRENT * CATEGORY: Outer Irregular Satellites | Other Icy Satellites

CURRENT : None | None

AUTHORS (FIRST NAME, LAST NAME): Tilmann Denk[1], Stefano Mottola[2]

INSTITUTIONS (ALL): 1. Freie Universitat Berlin, Berlin, Germany.
2. DLR, Berlin, Germany.

Contributing Teams:

Abstract Details