## **Resource:** Physical\_models

Compilation of estimates of the rotation period and spin-axis coordinates of asteroids.

For each solution, the SSO identification, the rotation period ( $Period \pm dPeriod$  in h) and/or the spin-axis coordinates [(Lon,Lat)  $\pm$  (dLon, dLat) in degrees] and method are listed.

### **Description of columns**

Column	Туре	Description
Num	int	Asteroid IAU Number if available
Name	str	Asteroid name or designation
Period	float	Rotation period (h)
dPeriod	float	Uncertainty on the rotation period (h)
period_flag	str	Quality flag (from LCDB)
period_type	str	Either synodic or sidereal
Lon	float	Longitude or Right ascension of the spin axis (deg)
Lat	float	Latitude or Declination of the spin axis (deg)
dLon	float	Uncertainty on Longitude or Right ascension (deg)
dLat	float	Uncertainty on Latitude or Declination (deg)
rPlane	str	Reference plane for coordinates (equatorial or ecliptic)
select	int	Flag for selection (black list, neutral, forced: -1/0/1)
iddataset	int	Unique dataset identifier from the source.ods file

#### Methods

The method is specified for an entire file in the sources.ods. It can be

- A consensus from the community
  - IAU : value set by a WG of the IAU
- Shape modeling from multiple data source
  - KOALA : direct-imaging, lightcurves, and occultation
  - ADAM : direct-imaging, lightcurves, radar, and occultation
  - SAGE : lightcurves and direct-imaging
  - Radar : from radar echoes
  - Radar-LC : from radar echoes combined with lightcurves
  - LC-TPM: lightcurves and infrared photometry
  - SPACE : based on a close-encounter by a space mission
- Rotation or Spin/Shape model from lightcurves only
  - LC : simple light curve
  - LCI : light curve inversion (Kaasalainen+2001)
  - A-M : Amplitude-Magnitude (Zappala+1983)
- Scaling of shape models from light curves by
  - LC+TPM : infrared photometry (via ThermoPhysical Model)
  - LC+OCC : stellar occultations
  - LC+IM: disk-resolved imaging
- Shape modeled as ellipsoid
  - TE : from light curves
  - TE-IM: from disk-resolved images
  - TE-Occ: from stellar occultations
  - Speckle: from speckles observations
- Spin orientation derived from a companion
  - Bin-IM: Orbit of the companion determine with direct imaging

#### **Reference plane**

The column rPlane only accept a limited number of valid entries, indicating the reference plane for the spin-axis coordinates:

- EQJ2000 : Equatorial plane at the J2000 epoch. Coordinates are (RA,Dec)
- ECJ2000 : Ecliptic plane at the J2000 epoch. Coordinates are (Long,Lat)

# **Quality flag**

The column period\_flag is inherited from the LCDB (e.g., Warner+2021), and use a numerical scale (1, 2, 3) for increasing quality, modulated by signs (+,-).