

CONTROL ID: 2365089

TITLE: Chariklo's size, shape and orientation from stellar occultations

ABSTRACT BODY:

Abstract (2,250 Maximum Characters): Chariklo is the largest Centaur object known to date, and it is surrounded by dense and narrow rings (Braga-Ribas et al. Nature 508, 72, 2014).

The size, shape and orientation of the central body are important parameters to better understand the dynamics of the rings.

In that context, we have analyzed three stellar occultations by Chariklo and its main ring observed on June 3, 2013, April 29, 2014 and June 28, 2014.

Elliptical limb fitting to Chariklo's main body occultation chords has been performed, where we denote a (resp. b) the semi-major (resp. semi-minor) axis of the limb.

Preliminary results indicate that Chariklo's limb is elliptical with axes ratio $b/a \sim 0.89$.

We obtain $a \sim 133$ km and $b \sim 119$ km, providing an equivalent radius

of $R_{equiv} = \sqrt{ab} \sim 126$ km. The rms dispersion of the fit, about 4 km, is compatible with local topographic features on a small icy body. For comparison, an equivalent radius

of $R_{equiv} = 119 \pm 5$ km, based on thermal data, is given by Fornasier et al, AA 518,

L11, 2014, while Duffard et al. AA 568, A79, 2014 estimate $a = 122$ km and $b = 117$ km.

Our results are obtained under the simplifying assumption that the main ring is circular and that its center coincides with that of Chariklo. Caveats and error bars will be discussed, and dynamical implications will be presented. In particular, rough estimations of the ring apsidal precession rates will be given, as well as constraints on Chariklo's density.

CURRENT CATEGORY: Planetary Rings

CURRENT : None

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