

## A SUSPECTED CONTACT BINARY 3169 OSTRO - NEW MODEL AND ITS UNCERTAINTY.

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**Introduction:** 3169 Ostro is an asteroid from the inner part of the main belt and belongs to the Hungaria family. Its size was determined to 4.662 km [1] and rotation period for 6.509 h [2]. The first photometric observations of 3169 Ostro were performed in the year 1986 [3], since then asteroid was observed during its several apparitions at different ecliptic longitudes. The amplitude of the lightcurves changed from 0.45 to 1.20 mag, which may imply highly elongated shape or binarity of the object. Although the asteroid has been observed for many years its real nature still remains unknown. We do not know if it is contact binary or a single object which has bilobed shape. The shape models of 3169 Ostro ([2], [4], [5]) presented so far did not determine concluding solution.

**Observations:** In our work we used all photometric data available in public databases and our own archive, supported with new observations obtained in April 2019 (during nine nights) with 0.7 m robotic Roman Baranowski Telescope (RBT). It is located at Winer Observatory, Arizona, USA, and belongs to the GATS system (Global Astrophysical Telescope System [6]).

**Modeling:** For modeling of 3169 Ostro we used the new version of the SAGE algorithm (Shaping Asteroid models using Genetic Evolution [7]) which enables asteroid non-convex shape modelling, determination of the

sidereal rotation period and spin axis orientation. The SAGE code is based only on the photometric lightcurves of asteroids. Modified SAGE code [8] calculates also uncertainties of the created models which are very important and crucial in case of challenging targets, like 3169 Ostro.

As a result we are presenting a new non-convex single body model with its uncertainties and compare it with a model calculated under the assumption of binarity of the body.

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