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Lightcurve analysis on asteroids from BNAO Rozhen observations in 2021

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In the last two decades, part of the observational time at Bulgarian National Astronomical Observatory (BNAO) Rozhen was dedicated to asteroid observations. Even though we had limited time, we collected enough information to proceed with differential photometry on many asteroids. Using a combination of lightcurves of an asteroid, gained from observations at several oppositions, we were able to determine precise synodic periods, and through an analysis of the different lightcurves, we can give predictions about their preliminary shape.

In this work, we will present the process for synodic period determination for several asteroids. Moreover, using the characteristics of the lightcurves, we will calculate the ratio between the axis of the asteroid and give first assumptions about its shape.

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