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Space debris' altitude determinations using 35 cm telescope

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Abstract. In this paper we present a method to determine an altitude of a satellite using observations from a small telescope. The focus is given to use the method for space debris' detection.

To perform the necessary observations a rotating shield needs to be facilitated in order to create dashed satellite trails on the frames. The length of a trail gives us precise information on the object's altitude. In order to perform callibration for the method, multiple satellites have been observed with well known orbital parameters that were taken from the Two Line Elements set catalog (TLE). Choice of the objects has been based on their altitude during the measurement time. Required data was derived from the TLE database. The satellites have been divided into groups with particular altitudes and an altitude-trail-length diagram was created.