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Space Debris Detection, Tracking and Characterization (1)

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SMARTNET^{TM} - EVOLUTION AND RESULTS

Abstract

Operation of geostationary satellites and research of the geostationary region depend on both modelling e. g. of the environment and data banks consisting of objects with preferably high accuracy ephemerides and, if possible, completeness of the number of objects in this region. Of course, due to physical reasons, not all objects are detectable, but for now it is assumed that an object size of 30cm or larger is sufficient for the aforementioned topics. It is of international interest to exchange and access this data on a low cost basis. For this reason, SMARTnet^{TM} was started, allowing for interchanging data, especially tracklets, within the community of telescope owners or telescope operators on a no exchange of funds basis. In this context, a tracklet is a series of the angle pair right ascension and declination including the corresponding epoch of the same object.

Over one year ago, SMARTnet^{TM} was opened for international co-operations. The main objective of SMARTnet^{TM} is the exchange of tracklets, allowing for each participating entity to develop own catalogues, own algorithms, and own products. In this paper, the consortium, consisting of the Astronomical Institute of the University of Bern (AIUB) and the German Space Operation Center (GSOC) at DLR, is presenting the current partners of SMARTnet^{TM}, statistics of data collected as well as results like e. g. tracklet correlation or achievable accuracy in orbit determination. Furthermore, an outlook of future contributions is given.