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Space Surveillance, Legal Aspects and Space Debris Modelling (5)

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CATALOGUING CAPABILITY OF OBJECTS IN THE GEO RING

**Abstract**

A dedicated observation campaign of the GEO ring has been carried out with telescopes located in south of Spain. The observations are done with telescopes normally dedicated to the observations of NEOs. These observations are based on autodetection process which has been also demonstrated to be useful for the observation of GEOs. The process is explained in this paper.

This campaign is intended for the demonstration of the cataloguing capability of objects in GEO based on a strategy that avoids the need of Follow-Up (FUP) observations. The FUPs are defined by default for any new observed objects in other strategies, and make the cataloguing process more complex, and in many cases require of human intervention. Normally, when an object is observed by the first time, the knowledge of the orbital data obtained with the very first observation is not good enough to allow the correlation of the following observations of the object with its first observation. In order to avoid this, the object is followed after a certain period of time, and thus, the orbital accuracy is improved, allowing further correlation of observations. This process requires the computation of a first estimation of the object orbit, and the computation of the object position after the time between FUPs, and then, point the telescope towards that point.

The strategy is based on the use of three telescopes, observing at different inertial points of the GEO ring, so that pseudo-FUPs are obtained without the need of pointing a telescope towards the direction of the object to be catalogued. It will be shown the correlation capabilities of the observations of the same object between the different telescopes involved in the process. The existence of these different telescopes provides observations, not only of the newly catalogued objects, but on all the objects, improving the cataloguing capacity of the process.