

Model Study of the Possibilities of Space Debris Cataloging

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The objective of this paper is the estimation of the characteristics of the measuring means and the software, providing the possibility of cataloging of smaller objects in the LEO region, in comparison with the existing catalog of space objects.

Cataloguing conditions

It is known that the cataloguing possibility depends not only on the quantity and accuracy of measurements, but also on the quantity of objects in space, as well as on the accuracy of the determination and prediction of orbital parameters. Estimation of orbit determination and prediction accuracy plays an important part in estimating the cataloguing possibilities, and the materials of known publications do not contain an accuracy estimation that is necessary for cataloguing the objects of various sizes. The figure below schematically shows the conditions under which the object designated by a red color can be catalogued.

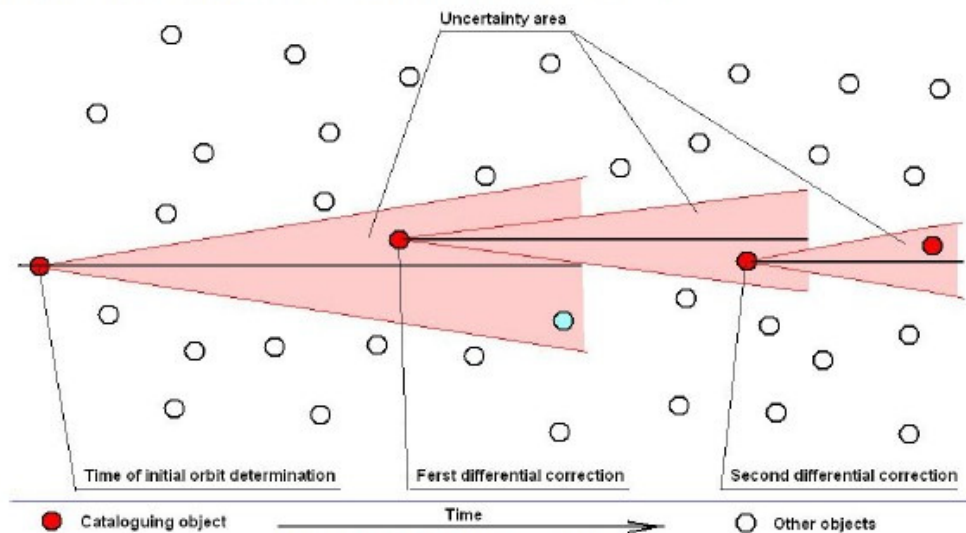


Figure 1. Cataloguing conditions

The light red color flooded the region of the possible positions of a considered object during the prediction of its state vector. *The necessary condition consists in the fact that the next new measurement of this space object (SO) would be first in time among the measured objects falling*

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