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Author: Mr. Liu Yisi
Chinese Academy of Sciences, China, liuyisi@nao.cas.cn

# THE PROCESS ANALYSIS AND ORBIT PREDICTION OF THE DECAYING SPACE DEBRIS

**Abstract**

The decaying of large spacecraft and spacecraft with nuclear fuel will pose a great threat to ground property and human safety. Accurate prediction of decaying time and decaying location is the foundation of human's response to calamity. The complex geometric shape of decaying objects, the uncertainty of atmospheric model and the lack of accurate and efficient method to deal with the transition flow field are the three major difficulties to the prediction of the whole decay progress. In this paper, parameters in decaying model especially the drag coefficient were modified by the mathematical statistic methods on the base of observed data. Modified model of decaying with optimized parameters was established which could bestly fit the data. Then this modified model was used to do theoretical analysis and instance verification. The accuracy of decaying time prediction of space debris was improved under the conditions of that the decaying object for verification was similar to the decaying object for training in geometric shape.