Establishment of Determination Method for Breakup Time

by

Ben KIMURA*1, Makoto TANAKA*2, Fumio TOHYAMA*3

(Received on September 30, 2004 & accepted on January 25, 2005)

Abstract

As human activities in space increase, the hazard of space debris impacts becomes an ever more serious concern. In particular, breakups of artificial objects increase space debris. Debris of more than 10 cm in diameter have been detected by ground-based radars and optical observations. The orbital data of these objects are cataloged by NASA. This paper describes the orbital analysis of space debris generated by breakups. We analyzed orbital data for the 4th stage engine of the Indian PSLV rocket, the Russian COSMOS 1813, and the Chinese CZ-4 rocket. As a result of this study, we developed a new determination method of the breakup time.

Keywords: *Space Debris, Breakup, Breakup Time, Orbital Analysis*

* 1 Graduate Student, Course of Aeronautics and Astronautics
* 2 Lecturer, Information Technology Resources Center
* 3 Professor, Department of Aeronautics and Astronautics