SPACE DEBRIS SYMPOSIUM (A6)
Mitigation and Standards (4)

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A COMPACT STORAGE DEORBITING SAIL FOR CUBESAT APPLICATIONS

Abstract

One of the most important innovations in to space sciences, due to the recent increasing of cubesat based missions, is the possibility to have a low cost platform suitable for testing in orbit new technologies. Moreover a lot of universities continue to build cubesats for educational purposes furthermore increasing the number of cubesats launched into the space. These satellites are, in general, not provided with a post mission disposal system to perform deorbiting at the end life of satellites. The result is an increasing numbers of space debris in a size range which is at the same time difficult to track and potentially destructive for operative missions. Moreover, typical cubesat features do not include active attitude and orbital control system capable to perform a de-orbiting manoeuvre. The space on board of cubesats is a particular issue especially for 1U cubesats, where usually all the available space is filled with the main subsystems of the satellite itself. Therefore, post mission disposal systems do not play a key role for operative life of cubesats and are not considered as design drivers. In case existing deorbiting guidelines would become rules, a post mission disposal system would become mandatory for all satellites, including nanosats. Thus, the Spacemind division of NPC Italy, which is directly descended from the former Space Robotics Group of University of Bologna, has designed and manufactured a deorbiting drag sail which takes 20