

SPACE DEBRIS SYMPOSIUM (A6)

Poster Session (P)

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STUDY FOR DE-ORBIT SCHEMES OF LAUNCH VEHICLE LAST STAGE

Abstract

In order to reduce the generation of space debris effectively, avoid the space debris endanger the safety of space activities and spacecrafts, protect the space environment, it becomes a necessary and urgent issue that the launch vehicle last stage de-orbits passively or using its own power after the payload separation. In this paper, the passively and actively de-orbit technologies and their development trends of domestic and international launch vehicle last stage are elaborated. Several actively de-orbit options of the near-orbit launch vehicle last stage which use its own power are focused on. And the relative key technologies of actively de-orbit are discussed in detail, which includes the orbit design methods, the flight procedure design, the propellant management technology and the attitude control technology, etc. Finally a feasible scheme is proposed, which solved the problem that control the orbital lifetime of the near-orbit launch vehicle last stage less than 25 years. This scheme lays a foundation to the realization for the orbital lifetime control of the launch vehicle last stage and the mitigation for space debris.