

15th IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Interactive Presentations (IP)

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LASER-BASED MITIGATION OF THE LOW-EARTH ORBIT DEBRIS ENVIRONMENT

Abstract

The primary objective of the Space Environment Research Centre's (SERC) is to demonstrate the perturbation of an on-orbit object using photon pressure delivered from ground-based lasers. SERC is executing this multi-national program on behalf of government, industry and university research partners.

SERC was founded in 2014 and in its initial 3 years has achieved excellent progress in the multi-discipline program towards achieving the demonstration. Significant progress has been achieved including: improved optical and laser tracking precision, adaptive optics for improved optical tracking and laser beam delivery; orbit determination and propagation; conjunction assessments, development of a new precision space object catalogue; and SERC development of cubesat payloads to facilitate the laser manoeuvre demonstrations.

Progress will be reviewed, and the effort remaining to complete the initial demonstrations before 2020 will be described.