

## **Laser Ranging for the Precision Orbit Determination and Remote Manoeuvre of Space Debris**

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The Space Environment Research Centre (SERC) is a consortium of companies and research institutions that have joined together to pursue research and development of technologies and capabilities that will help to preserve the orbital space environment. The has been allocated \$150 million in facilities and resources to [inter alia] extend laser ranging technology to the precision orbit determination of space debris and its removal from space using laser radiation pressure.

The SERC consortium includes, Electro Optics Systems (Australia), Lockheed Martin Australia, Optus Satellite Systems (Australia), The Australian national University, RMIT University, National Institute of Information and Communications Technology (NICT, Japan) as well as affiliates from NASA Ames and ESA. SERC is a recipient of an Australian Government Cooperative Research Centre grant.

SERC will pursue a wide ranging research program including technologies to improve tracking capability and capacity, orbit determination and propagation algorithms, conjunction analysis and collision avoidance. All of these technologies will contribute to the flagship program to demonstrate active collision avoidance using photon pressure to provide remote maneuver of space debris. This project joins of the proposed NASA Lightforce concept with infrastructure and capabilities provided by SERC.

This paper will describe the proposed research and development program to provide an on-orbit demonstration within the next five years for remote maneuver of space debris.