



# A Transformable and In-Orbit Manufacturable Space Debris Collector

**Origami-inspired deployable spacecraft capturing orbital debris to reduce collision risks in orbit.**

Researchers at Purdue University have developed a platform for space debris collection to combat the exponentially increasing debris present in earth orbit. To meet the ever-evolving needs for compact deployable spacecrafts, the system leverages a multi-layer conical-kresling origami pattern that folds in sequence to trap debris while leaving other layers expanded to capture more debris. This geometry also results in greater ability to withstand debris impact. The structure is designed around additive manufacturing to leverage the advantages of in-orbit production. The primary application of Purdue's system is risk reduction for organizations interested in spacecraft orbit and operation.

**Technology Validation:** This technology has been validated through the fabrication and testing of a scaled down prototype system.

## Advantages

- Multiple layers for staged debris capture
- Designed for impact absorption
- Manufacturable in-orbit

## Applications

- Reducing risk of damage from space debris
- Spacecraft orbit and operation

**TRL:** 3

**Intellectual Property:**

**Technology ID**

2023-DAI-70156

## Category

Aerospace & Defense/Spacecraft  
Systems & Satellite Technologies

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## View online



Provisional-Gov. Funding, 2023-02-28, United States

Utility-Gov. Funding, 2024-02-27, United States

**Keywords:** space debris mitigation,in orbit manufacturing,deployable spacecraft systems,origami inspired structures,satellite risk reduction,orbital debris collection,impact absorption design,additive manufacturing space,spacecraft safety systems,orbital sustainability