

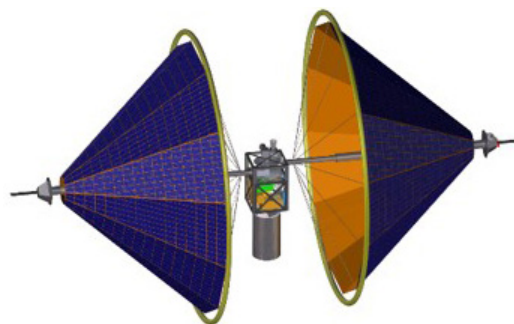


Lightweight Integrated Solar Array and Transceiver

Improving Electrical Power and Communication Capabilities in Small Spacecraft

The Lightweight Integrated Solar Array and Transceiver (LISA-T) project will leverage several existing and on-going efforts at Marshall Space Flight Center (MSFC) for the design, development, fabrication, and test of a launch stowed, orbit deployed structure on which thin-film photovoltaics for power generation and antenna elements for communication, are embedded. Photovoltaics is a method for converting solar energy into electricity using semiconductor materials. The system will provide higher power generation with a lower mass, smaller stowage volume, and lower cost than the state of the art solar arrays, while simultaneously enabling deployable antenna concepts.

As most CubeSats are constrained to 10's of watts of electrical power due to the limited surface area available for photovoltaics, LISA-T seeks to address the issue by developing deployable arrays that increase available surface area for photovoltaics thus providing hundreds of watts. When stowed, such an array would be packaged into a standard one-unit (1U) CubeSat, which is a small spacecraft with the dimensions 4 inch x 4 inch x 4 inch (10 centimeter x 10 centimeter x 10 centimeter), and weighing 2.2



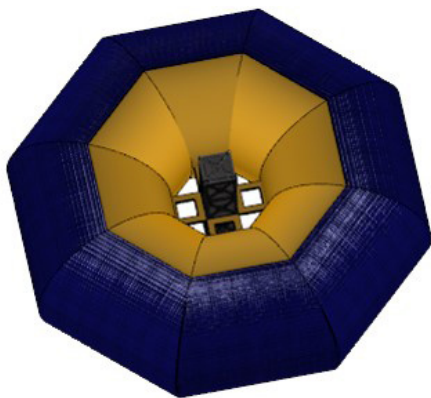
Artist rendering of parasol LISA-T deployed on orbit

pounds (1 kilogram). Additionally, an antenna array would be embedded into the backside of the deployable photovoltaic array to increase communication capability.

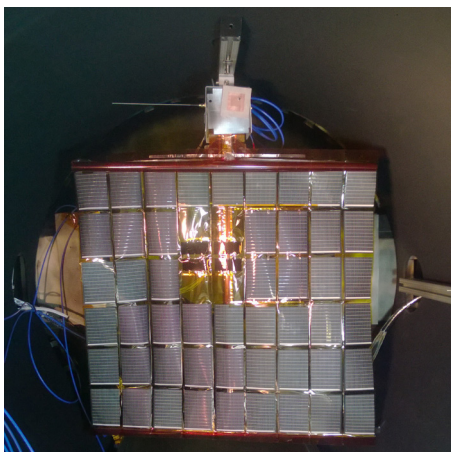
The LISA-T technology is being developed by NASA's MSFC in Huntsville, Alabama, in partnership with ManTech\NeXolve also in Huntsville.

The LISA-T project is a Space Technology Mission Directorate (STMD) Early Career Initiative (ECI) project. The ECI provides an opportunity to develop NASA early career technologists and to advance the next generation of innovators. The LISA-T project is managed by the Small Spacecraft Technology Program (SSTP), which is chartered to develop and mature technologies to enhance and expand the capabilities of small spacecraft

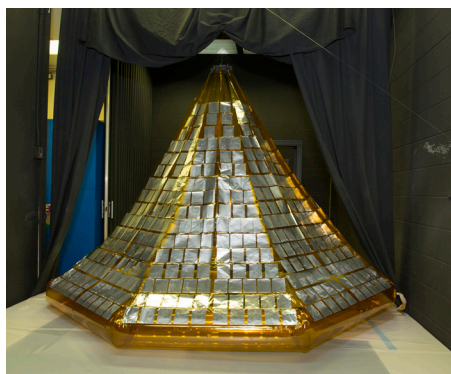
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Artist rendering of conceptual torus configuration of LISA-T deployed on orbit



The LISA-T test article in the High Intensity Solar Environment Test (HISSET) Chamber at MSFC, May 2015



The LISA-T test article at MSFC, September 2013

with a particular focus on communications, propulsion, pointing, power, and autonomous operations. SSTP is one of nine programs within NASA's STMD.

For more information about the SSTP, visit:
<http://www.nasa.gov/smallsats>

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