



# International Space Station (ISS) Power Augmentation (IPA) with the ROSA Solar Arrays

Space Power Workshop 2021

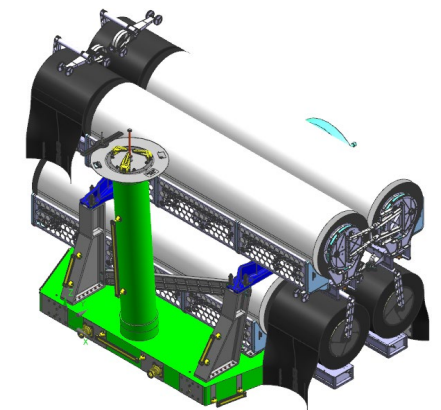
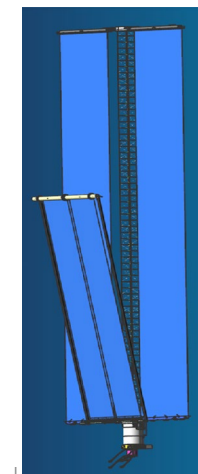
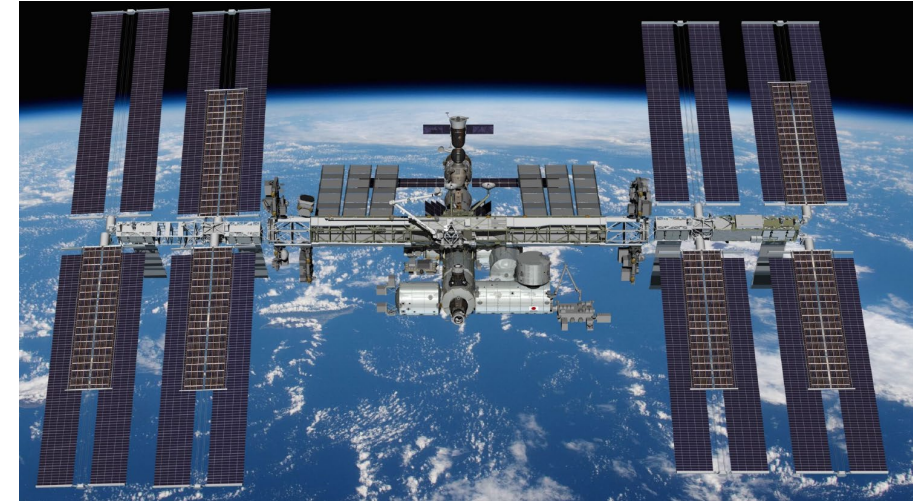
**Matt LaPointe**  
Technical Director



# ISS Power Augmentation Project

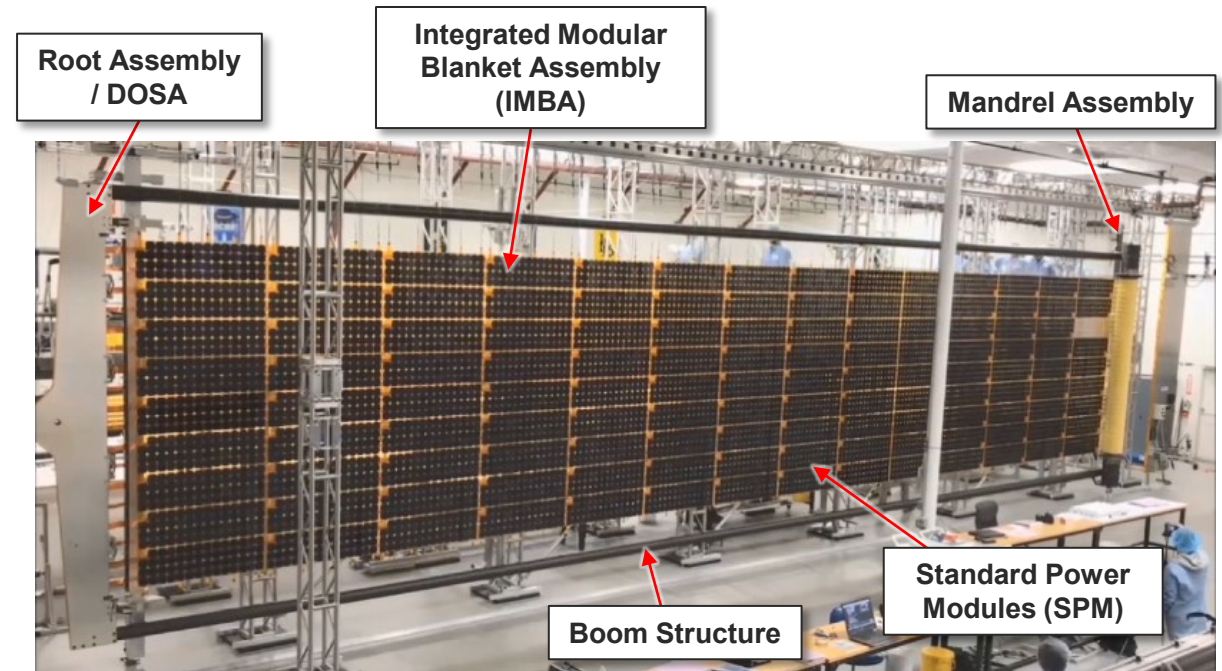
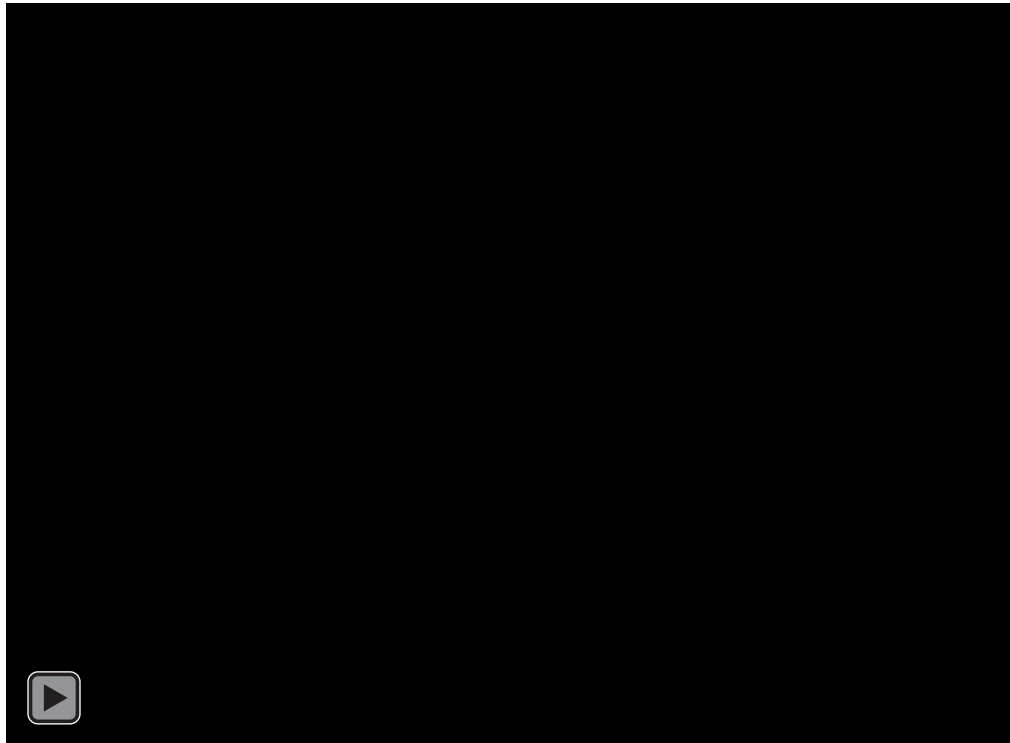
## Powering ISS for the next decade and beyond

- Six new ROSA Solar Arrays (aka iROSA) provided by Deployable Space Systems, a Redwire Company
- Flight Support Equipment (FSE) and Mast Canister Modification hardware (Mod Kit) provided by Boeing
- Pairs of iROSA wings delivered to ISS via three SpaceX Dragon CRS missions
- Wings installed and deployed by EVA



# iROSA Solar Arrays

## ROSA Overview

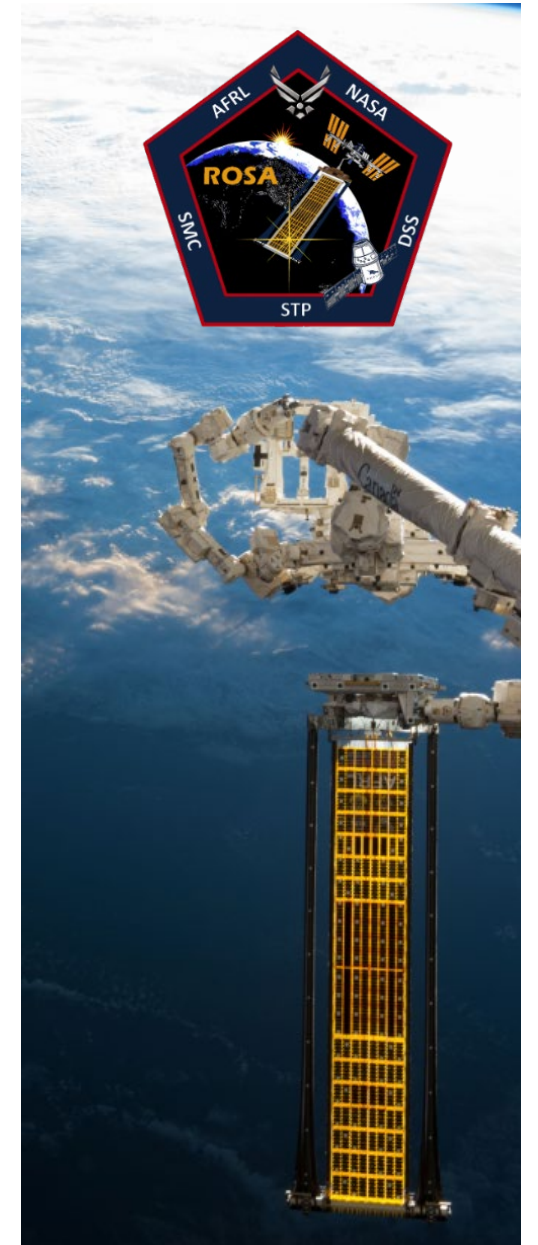
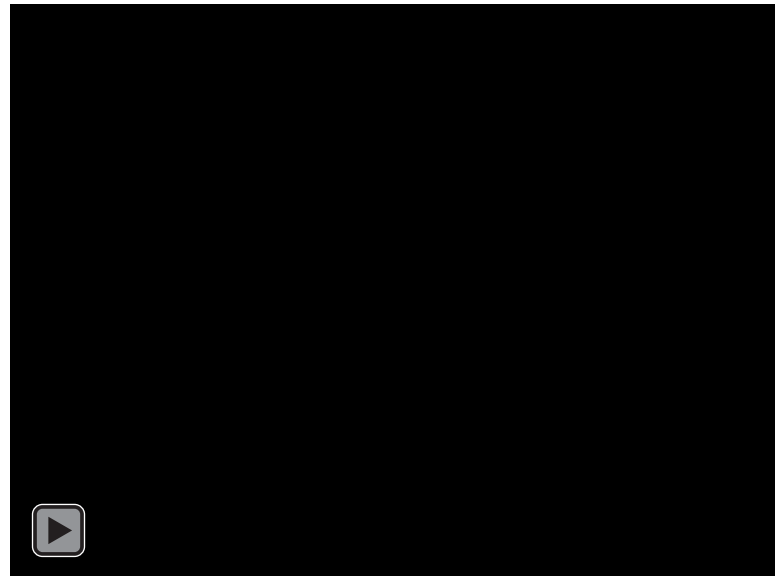


ROSA – Simple, Modular, Innovative

# iROSA Solar Arrays

## ISS Flight Experiment

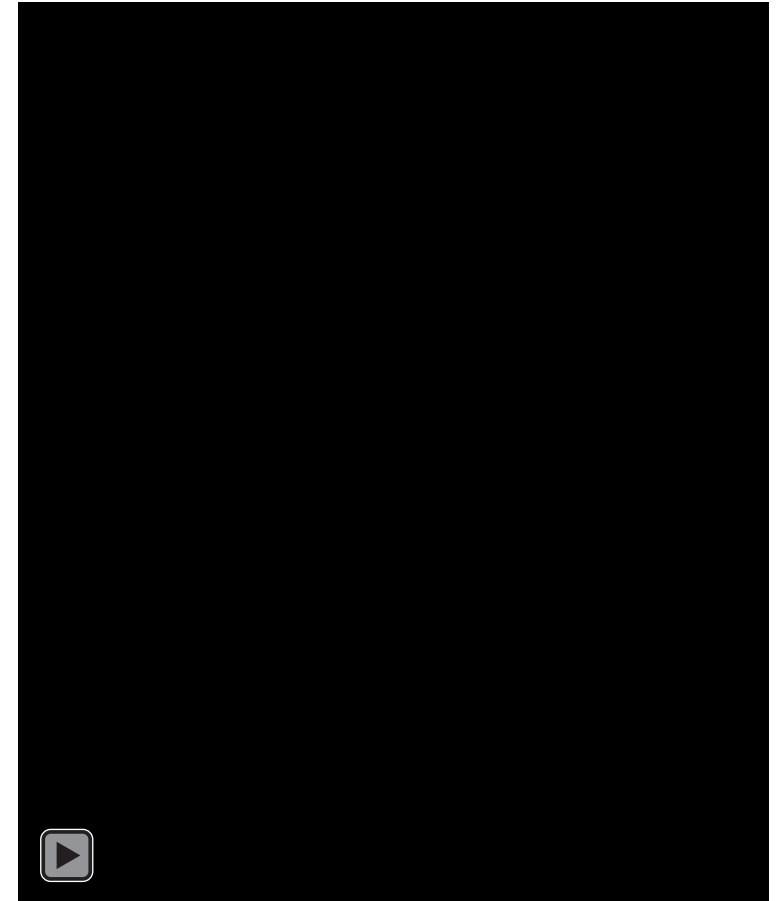
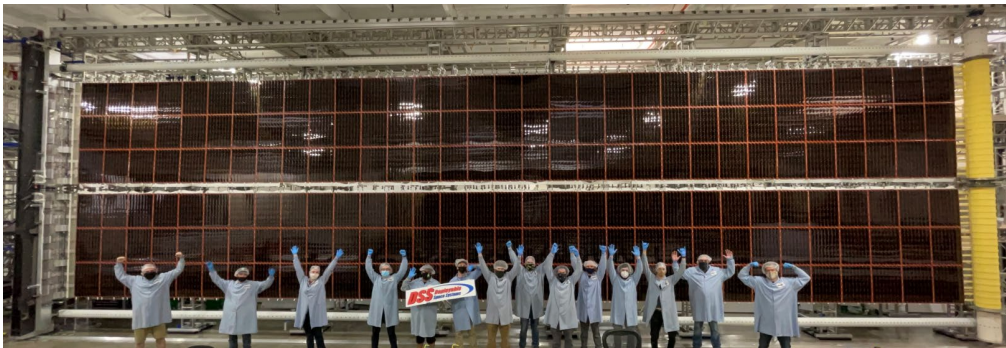
- 2017 Demonstration Mission – First On-Orbit Validation of ROSA
- 100% Test Objectives Achieve, including deployment, structural dynamics testing and multiple retractions/re-deployments



# iROSA Solar Arrays

## iROSA Design Summary

- Folded ROSA design – Maximized Stow Volume
- 6.5" diameter Boom – Massive Torque Margin
- 28-kW BOL Flex Blanket IMBA featuring Spectrolab XTJ Cells
- Designed for complete EVA operation
- Mounted to ISS Solar Array Mast Canister

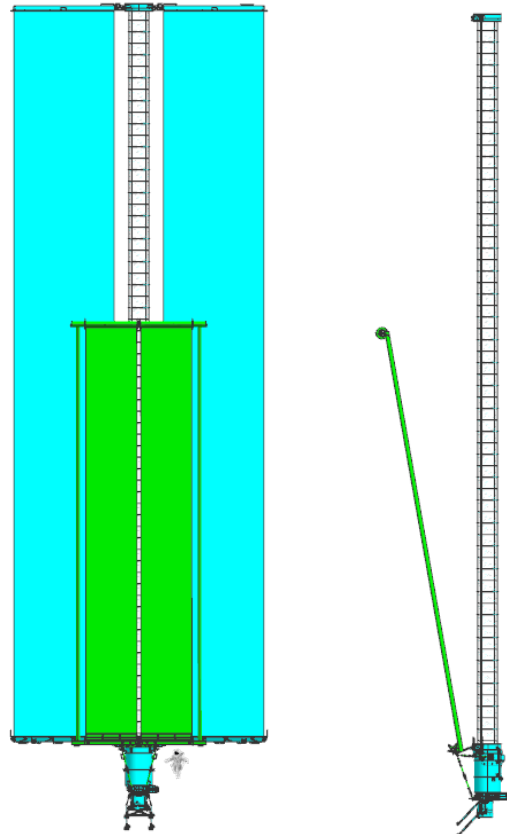


# iROSA Solar Arrays

## Comparing iROSA to Legacy ISS Solar Arrays

### Legacy ISS Arrays

- 39' wide x 112' long
- Approx. 35 kW BOL
- Silicon cells
- ~14.2% Cell Efficiency



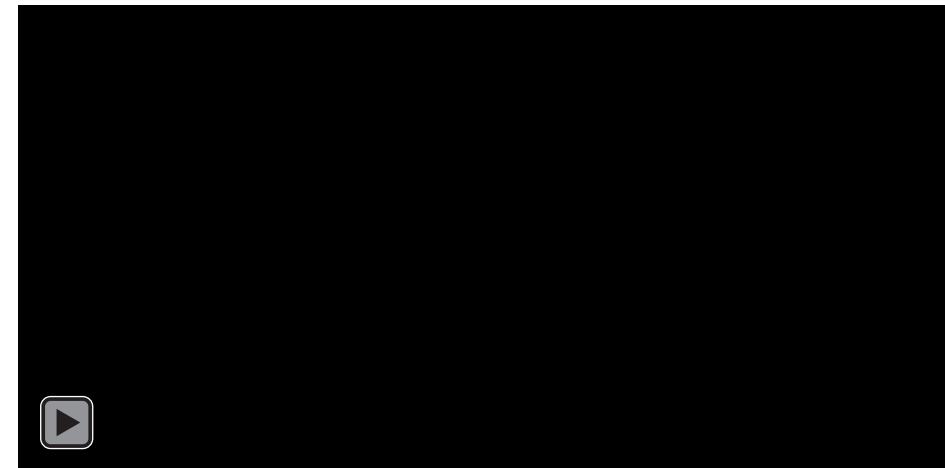
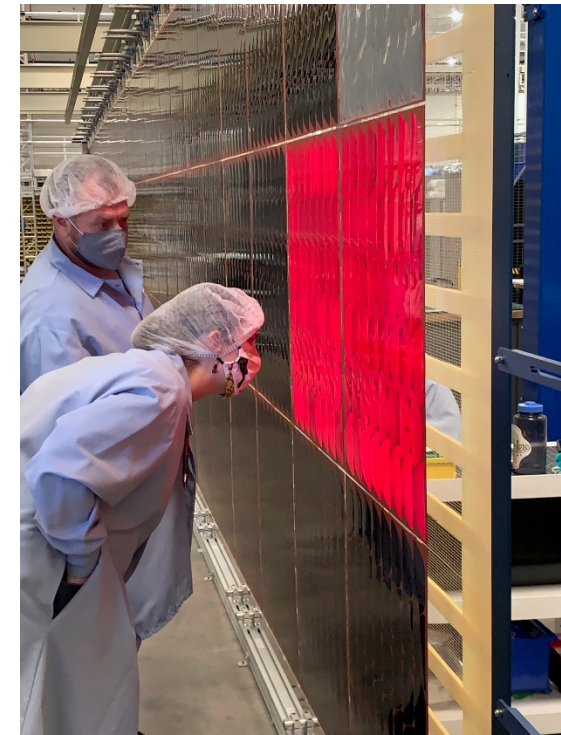
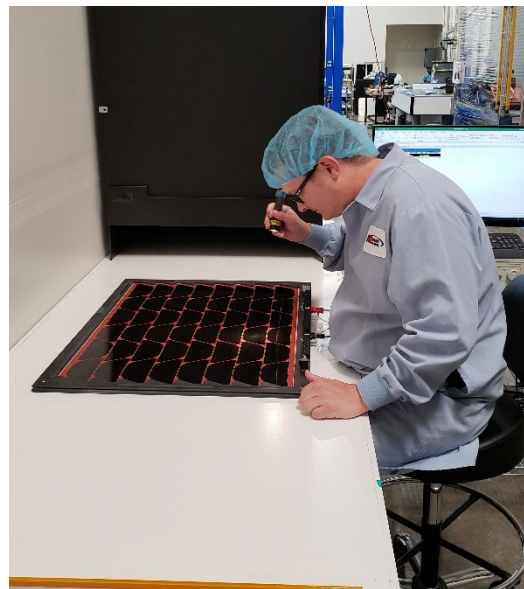
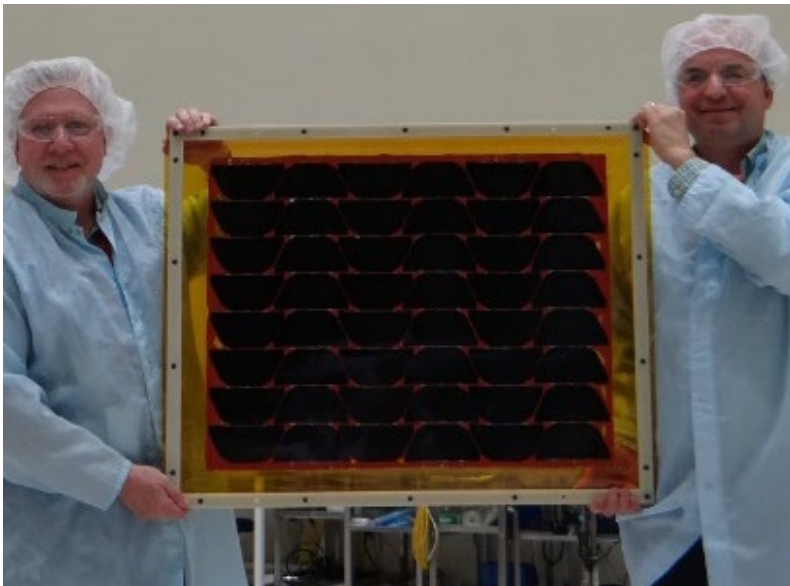
### iROSA Arrays

- 20' wide x 60' long
- 28+ kW BOL
- Triple-Junction XTJ Prime Solar Cells
- 30.7% Cell Efficiency

# iROSA Solar Arrays

## SPM Details

- 30.7% Spectrolab XTJ-Prime Nested-SuperCell CIC assemblies
- 48 series interconnected cells per SPM (2 SPMs per string)
- Heritage blocking diode boards with all welded construction



# iROSA Solar Arrays

## Launch Configuration

- Folded design for max launch volume packaging
- Two iROSA Wings stacked per Launch

