
Radio Science and Astronomy via the Universal Space Transponder

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- The Universal Space Transponder is JPL's next generation software defined radio, with EM units built and tested
- The UST modular architecture and in-flight reprogrammability supports additional RF "slices" at any frequency for telecom or science purposes
- Integrating radio science instruments into the UST architecture will reduce cost, mass, and power
- Project objective to demonstrate the ability of UST to support radio science by developing two new UST slices:



Planetary Emissions Receiver:

- UST could capture and spectrally process radio emissions in the 10 kHz to 40 MHz range from the gas giants
- With three orthogonal antenna inputs, the UST also capable of determining source direction and polarization

Uplink Bistatic Radar Receiver:

- UST could receive and process signals from powerful ground transmitters (e.g. Arecibo or Goldstone) reflected off of small body objects
- Allows surface and subsurface characterizations of targets (Near Earth Objects, Main belt asteroids, or Trojan asteroids) with a high spatial resolution