



TOPIC # - TDC - 202

NASA PSYCHE: Deployment of Cabling on Hypothesized Surfaces

BACKGROUND

The NASA Psyche mission is an orbiter mission to the metal-rich asteroid, Psyche, in the asteroid belt between Mars and Jupiter. The spacecraft, which launched in October 2023 and will arrive at the asteroid in mid-2029, will study the asteroid from orbit for the first time and will not land on the surface.

Using the asteroid's known and hypothesized environmental and surface conditions, which have been laid out in recent scientific reports (and keeping in mind other constraints such as its gravity, length of day and year, rotation, surface temperature, etc.), you will design a robotic system that can deploy a 1 km cable (consisting of 10x single mode fiber optic lines and 10x 26 AWG copper pairs sheathed in a UV-resistant polyurethane coating) on the surface of Psyche for the construction of a hypothesized low-frequency telescope array. The project deliverables can include, for example, calculations, simulations, design packages, or, if time and resources in your course allow, physical prototyping.

NASA PSYCHE

The Psyche mission is developing Psyche-focused projects for capstone courses across a range of disciplines. Note: to participate in the PSYCHE topics, teams should be part of a capstone class.

See NASA PSYCHE for additional program information.

DESIGN TEAM PROFILE

NASA MENTOR:	Cassie Bowman
LEVEL:	Undergraduate students of any level
MAJOR/DISCIPLINE:	All relevant majors welcome
TEAMS:	Teams should be capstone classes.
DURATION:	1 or two semesters

