

# Astrophysical and Planetary Sciences Colloquium

Monday, September 23, 2019 at 4:00 PM

JILA Auditorium

*Refreshments served 30 minutes prior to start of talk in front of the JILA Auditorium.*

Lindy Elkins-Tanton

## "The NASA Psyche Mission: Planning a Mission to a Little-Known Target"



### Abstract

The NASA Psyche mission was selected in January 2017 as the 14th in the Discovery program. The spacecraft is scheduled to launch in August 2022, rendezvous with the asteroid Psyche in January 2026, and orbit for 21 months. The leading hypothesis for the formation of asteroid (16) Psyche is the metal core of a tiny planet that had its rocky exterior removed by some number of hit-and-run collisions, all in the first few millions of years after solids began to form in our solar system. We believe Psyche is composed primarily of nickel and iron metal, but we have only spectral and radar measurements from Earth; we have no optical images of Psyche larger than two pixels. Humankind has never visited a metal object before, and Psyche is the largest example by far in our solar system. The mission therefore has the challenge of planning a spacecraft and its payload to visit and measure a largely unknown object. In this talk I'll present the state of knowledge about Psyche, our hypotheses for what we might discover, and how we have designed a robust instrument suite to make the measurements once we arrive.