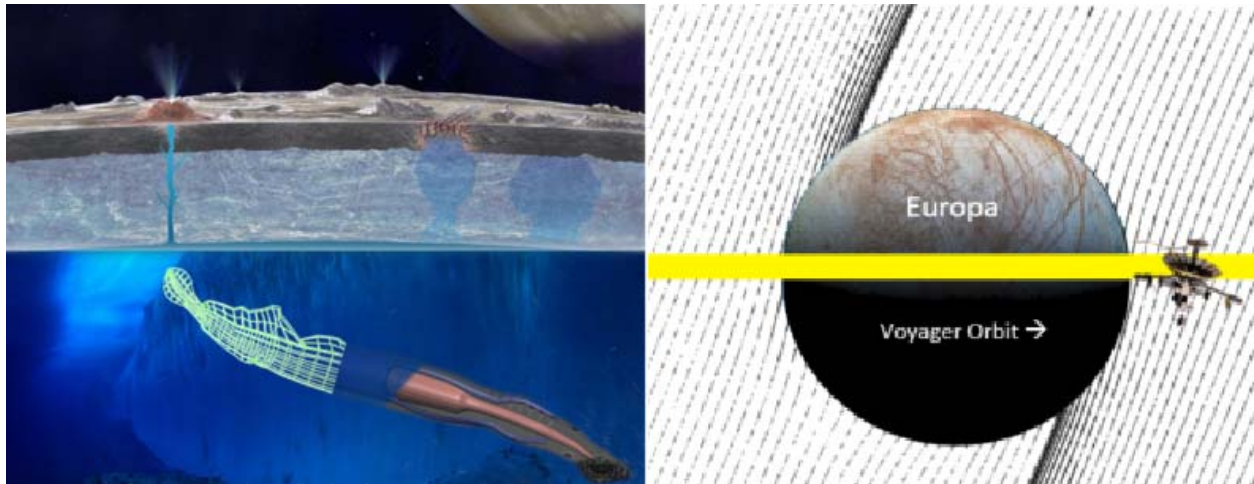


Advanced Space Technology for a Europa Rover



Advisor: Mason Peck, mp336@cornell.edu

Number of students: 1-2

Majors: Upper-level undergraduate or MEng; Physics, AEP, MAE, or ECE

The student will work with a small team of Ph.D. students and undergraduates on a NASA-sponsored project called [Soft Robotic Rover with Electrodynamic Power Scavenging](#). The goal of the research is to assess the feasibility of a bio-inspired underwater vehicle to explore the saltwater ocean of Jupiter's moon Europa.

This role focuses on design and analysis of subtle and likely unfamiliar space technologies to determine the way forward for this innovative rover concept. Examples include a long conductive cable that collects electromagnetic energy from Jupiter's magnetic field as Europa passes through it; electrolysis of water to produce small cavities of gases within a rubber-like structure that can detonate and cause the structure bend and swim through the water; radiocommunications through many kilometers of water and ice to an orbiter or surface vehicle; and ways in which the rover can penetrate the thick layer of ice on Europa's surface to reach the ocean below.

Some familiarity with spacecraft technologies and design practices is required—whether through previous coursework or (preferably) experience with previous hardware-focused projects.