

The Keck Institute for Space Studies  
presents the following lecture:

# **The Exobiology Extant Life Surveyor (EELS) Robotic Architecture**

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**Monday, July 15, 2019**

**4:30 PM Refreshments**

**5:00 PM Lecture**

**Hall Auditorium**

**135 Gates-Thomas Building  
California Institute of Technology**

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Plumbing the depths of the Enceladus and possibly Europa plume vents for liquid water, searching for extant life. Descending crevasses in ice sheets on Earth to discover the fate of melt water runoff and its effects for Earth science.

The Exobiology Extant Life Surveyor or EELS robot architecture is designed to carry the latest instruments into these dynamic arenas in search of life. It is adaptable to traverse ocean world inspired terrain, fluidized media, enclosed labyrinthian environments and liquids. It is a snake-like self-propelled endoscope form comprising serially-replicated segments with encapsulated locomotion and bending. Multiple segments sequentially reverse rotations to reduce torsion in the endoscope, or replicate rotations to perform holonomic movements for steering.

With EELS we can finally address the civilization-level science question in our own cosmic backyard: Are we alone?

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Seating is limited and is available on a first come, first served basis.

A detailed illustration of the EELS (Exobiology Extant Life Surveyor) robot. It is a snake-like, self-propelled endoscope with multiple segments, shown in a dynamic, curved pose. The robot is dark in color with some metallic highlights. It is set against a background of a blue, icy, and turbulent environment, possibly representing the interior of an ice sheet or a plume vent. The robot's head is at the bottom right, and its body extends towards the top left.

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