

# Aerospace Seminar



## Dr. Jill Seubert

**Deep Space Navigator at NASA's Jet Propulsion Laboratory**

## Successfully Navigating InSight To Mars

**Wednesday, March 20, 2019 | DLC | 12:00 P.M.**

**Abstract:** The InSight mission successfully launched to Mars on an Atlas V 401 launch vehicle from the Western Test Range at Vandenberg Air Force Base on May 5th, 2018 and landed in the Elysium Planitia Region on November 26th, 2018. In order for the InSight spacecraft to execute a safe Mars landing, it was crucial that the navigation team accurately predict the trajectory and deliver the spacecraft to the targeted atmospheric entry point. Though InSight was the eighth successful robotic Mars landing, particular navigation challenges were introduced by the trajectory geometry as well as the unbalanced thruster system used for active attitude control. This talk will focus on the orbit determination process for trajectory reconstruction and prediction, the navigation performance at key milestones throughout cruise, and will discuss various challenges that the navigation team faced from launch to landing.

**Bio:** Dr. Jill Seubert is a deep space navigator at NASA's Jet Propulsion Laboratory, and is a leading expert on astrodynamics, estimation, deep space navigation, high-fidelity clock stochastic modeling, and mission and science applications of one-way radiometric data. She has supported the navigation of numerous Mars missions, including the Mars Reconnaissance Orbiter, Mars Science Laboratory, and the recently-landed InSight spacecraft. She is currently the Orbit Determination Lead for the Mars Science Mission 2020 mission scheduled for launch in 2020. In addition to her work in interplanetary navigation, Dr. Seubert is the Deputy Principal Investigator of NASA's Deep Space Atomic Clock Technology Demonstration Mission.

Dr. Seubert is the recipient of the University of Colorado College of Engineering Recent Alumni Award (2017). She holds a B.S. degree in Aerospace Engineering from the Pennsylvania State University and M.S. and Ph.D. degrees in Aerospace Engineering Sciences from the University of Colorado at Boulder.



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