



Department of Engineering
Seminar Program
Wednesday, October 16, 2013
Shanahan Teaching and Learning Center
Lecture Hall 1430, 4:10pm

“Lay In a Course!”

“A Mud Approach to Astrodynamics, Orbit Determination and Trajectory Control”

Brian Kirkpatrick '07

Summary:

"We will begin with a quick introduction to astrodynamics, surveying restricted 2-body gravitational systems in 1, 2, and 3 dimensions to characterize solutions and present the classical orbital elements. We will then explore different methods of orbit determination, posed as a variety of known conditions for which orbit solutions must be obtained. Lastly, we will survey the problem of trajectory control in orbital dynamics, exploring the impact of noise and assumptions. These will inform insights into how spacecraft are controlled, maneuvered, and modeled. Real-world examples of trajectory control algorithms will be presented."

Bio

"Brian Kirkpatrick is an aerospace systems engineer currently performing modeling, simulation, and analysis tasks in space architecting for TASC, Inc., in El Segundo. Mr. Kirkpatrick obtained a B.S. in Engineering from Harvey Mudd in 2007, and an M.S. in Aerospace Engineering at Cal Poly (SLO) in 2009. While at Mudd, Mr. Kirkpatrick was the founding president of the Mudd Amateur Rocket Club, and has since explored problems in software engineering, modeling & simulation, and aerospace systems. Ongoing work includes a cloud-based IDE (Integrated Drive Electronics) for scientific computing, and interesting miscellaneous challenges in the aerospace industry."