



## AEROSPACE ENGINEERING SCIENCES

# Seminar



## Torin Clark

NSBRI First Award Fellow  
Jenks Vestibular Physiology Laboratory  
Harvard Medical School

## Human Spaceflight Challenges: Aerospace Human Factors and Astronaut/Pilot Health Concerns

Modern aerospace vehicles operate in challenging environments, leading to complex and often highly-automated vehicle system designs. Here we present research on designing novel display designs, control modes, and human-vehicle interfaces to improve overall astronaut-vehicle system performance. Interfaces are tested in human-in-the-loop experiments to quantify their impact on performance and safety, but also human parameters such as workload, situational awareness, and decision making. Furthermore, astronauts experience sensorimotor impairment resulting from gravity transitions during space exploration missions. We present how altered gravity affects human perception of orientation, ability to pilot the vehicle, and potential countermeasures for predicting and reducing impairment. Finally the impact of these studies and future research directions will be discussed.

**Monday, March 9, 2015**  
**12:00 noon**  
**DLC Bechtel Collaboratory**

### Biography:

**Torin K. Clark** completed his PhD in Aeronautics and Astronautics in 2013, as part of the Man Vehicle Laboratory at MIT. He is currently a National Space Biomedical Research Institute (NSBRI) First Award Fellow (postdoctoral fellow) at Harvard Medical School in the Jenks Vestibular Physiology Laboratory. His research interests are focused on space human factors and space biomedical engineering. This includes the design and testing of displays, controls, and interfaces for astronauts during critical mission phases and the development of countermeasures for astronaut sensorimotor impairment during gravity transitions. Dr. Clark was previously a Charles Stark Draper Laboratory Fellow (2008-2013), the MIT Aero-Astro Boeing Fellow (2012-2013), and currently is a member of the NSBRI Society of Fellows. He recently received the Stanley Roscoe Award for Best Doctoral Thesis from the Aerospace Human Factors Association (2014).