Entry, Descent and Landing Technology Development

In the past twenty years, significant advances have been made in our ability to land large payloads on the Mars surface, enabling a dramatic progression of science and exploration. Future missions may require an additional increase in landed performance. For example, current plans for human exploration of Mars call for the landing of 40-80 metric ton surface elements at scientifically-interesting locations within close proximity (tens of meters) of pre-positioned robotic assets. Such mission requirements pose significant challenges. In this seminar, past and present technology developments will be surveyed with an eye towards future flight system and mission challenges (landed mass, accuracy and surface elevation). The constraints of continued reliance on Viking-era spaceflight qualified technology will be highlighted and new approaches and technologies will be described. In addition, the application of some of these same technologies to science missions to other planetary bodies and a variety of Earth-based applications will be highlighted.

Dr. Robert D. Braun serves as the David and Andrew Lewis Professor of Space Technology at the Georgia Institute of Technology. He leads an active research and educational program focused on the design of advanced flight systems and technologies for planetary exploration. He has previously served as a leader and senior manager for several engineering organizations at NASA. In 2010-2011, he served as the first NASA Chief Technologist in more than a decade. In this capacity, he was the senior Agency executive for technology and innovation policy and programs and was responsible for creating the NASA Space Technology programs. From 1989 to 2003, he served on the technical staff of the NASA Langley Research Center. Dr. Braun received a B.S. in Aerospace Engineering from Penn State in 1987, M.S. in Astronautics from the George Washington University in 1989, and Ph.D. in Aeronautics and Astronautics from Stanford University in 1996. He is a member of the National Academy of Engineering, an AIAA Fellow and the principle author or co-author of over 250 technical publications in the fields of atmospheric flight dynamics, planetary exploration, multidisciplinary design optimization, and systems engineering. He lives on a small farm in Newnan, Georgia with his wife Karen and is the proud father of Zack, Allie and Jessica Braun.

Wednesday, April 23
12:00 – 1:00 PM
DLC Collaboratory