



Special Seminar

Dr. Chang-kwon Kang
University of Alabama



開催日(Date): 2019年6月26日(水) 14:30~15:30 Wednesday, June 26, 2019

会場 (Venue): Academic Link Center I-Building 3F (303)
Seminar Room “Kiwami”

講師 (Speaker): Dr. Chang-kwon Kang
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講演題目 (Title): Marsbees – Bioinspired Flight Vehicles for Mars Exploration

概要 (Abstract): With the emerging interest in landing humans on Mars, it is critical that our understanding of the Martian environment is complete and accurate. One way to improve our model of the red planet is through aerial surveillance, which provides information that augments the observations made by ground-based exploration and satellite imagery. However, flying on Mars is challenging due to the ultra-low-density Mars environment. This talk will cover our recent bioinspired solutions for flapping wing Mars flight, utilizing the same high lift producing mechanisms employed by insects on Earth. I will first discuss our measurements and analysis that the lift coefficient of Monarch butterflies, whose annual migration is the longest of insects, increases with decreasing air density. Motivated by this improved aerodynamic performance at lower density environments, we will derive a scaling method to find bioinspired Mars flight solutions. We demonstrate that a family of solutions exists for designs that are $O(10)$ gram, verified using a well-validated Navier-Stokes equation solver and physical experiments.

Biography: Dr. Chang-kwon Kang is an Assistant Professor at the Department of Mechanical and Aerospace Engineering at the University of Alabama in Huntsville. He received his doctoral degree in Aerospace Engineering at the University of Michigan in 2011, and his master's and bachelor's degrees in Aerospace Engineering from the Delft University of Technology in the Netherlands. His research interests include unsteady aerodynamics, fluid-structure interaction, bioinspired locomotion and flight, and computational fluid dynamics. His work has been supported by the NSF and NASA.

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