**Seminar Title: Game-Changing Technologies for Next-Generation Autonomous Aircraft: From Foundational Analysis to Experimental Practice**

**Seminar Abstract:**

Autonomous air vehicles are likely to change the way we think about air travel, aerial logistics, and air warfare in the coming decades. While current unmanned aerial vehicles (UAVs) have been largely successful in automating mission sets previously carried out by manned aircraft, the next generation of autonomous aircraft will be expected to carry out entirely new missions which were never before considered feasible. This talk presents a suite of game-changing technologies developed at Georgia Tech’s Aerial Robotics and Experimental Autonomy Lab that enable new autonomy capabilities for next-generation unmanned aerial vehicles. These include control laws for execution of emergency power-off landings, designs for interceptor UAVs that capture other aircraft, and algorithms for path planning and optimal control under uncertainty. The talk will feature a current research effort that is developing component mechanisms and adaptive control laws that enable multiple UAVs to transport payloads collaboratively. A second featured topic will cover an ongoing project to develop vision-guided control systems that enable UAVs to launch from and recover to moving ground vehicles. While varied in nature, these projects share a common thread in that they seek to develop practical technologies for autonomous aircraft through a strong coupling between dynamic analysis, control and estimator design, modeling and simulation, and experimental testing. The talk will conclude with a vision for future aerial robotics research that is highly interdisciplinary, collaborative, and focused on the creation of impactful technologies.

**Bio:**

Dr. Jonathan Rogers is the Lockheed Martin Associate Professor of Avionics Integration in the Guggenheim School of Aerospace Engineering at Georgia Tech. Prior to his appointment in the School of Aerospace Engineering, Dr. Rogers served as a faculty member in the School of Mechanical Engineering at Georgia Tech and the Department of Aerospace Engineering at Texas A&M University. He serves as director of the Aerial Robotics and Experimental Autonomy Lab (AREAL) where his group conducts research in autonomous air vehicles, controls, robotics, and mechatronics. He is the recipient of several research awards including the National Science Foundation CAREER Award, the US Army Research Office Young Investigator Award, and the Lockheed Martin Inspirational Young Faculty Award. Dr. Rogers is an Associate Fellow of the AIAA and currently serves as an Associate Editor of the Journal of the American Helicopter Society.