

PHYSICAL MATHEMATICS SEMINAR

CHALLENGES FOR THE DEVELOPMENT OF ROBOTIC INSECTS

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ABSTRACT:

We seek to elucidate how to apply biological principles to the creation of robust, agile, inexpensive robotic insects. However, biological inspiration alone is not sufficient to create robots that mimic the agile locomotion of their arthropod analogs. This is particularly true as the characteristic size of the robot is decreased: to create high performance articulated robotic insects, we must explore novel manufacturing paradigms, new forms of actuation and sensing, and alternative control strategies for under-actuated, nonlinear, computationally-limited systems. This talk will highlight research in the Harvard Microrobotics Lab aimed at creating a flying robotic insect the size of a housefly.

BIO: Robert Wood is an Assistant Professor in Harvard's School of Engineering and Applied Sciences (SEAS). Prof. Wood completed his M.S. (2001) and Ph.D. (2004) degrees in the Department of Electrical Engineering and Computer Sciences at the U. C. Berkeley. He is founder of the Harvard Microrobotics Lab which contains advanced facilities for rapid prototyping on the micron to centimeter scale. His current research interests involve the creation of biologically-inspired aerial and ambulatory microrobots, the unsteady aerodynamics of flapping-wing flight, minimal control of under-actuated nonholonomic nonlinear dynamical systems, and decentralized control of multi-agent systems. He is the winner of a 2007 DARPA Young Faculty Award, a 2008 NSF Career Award, a 2008 ONR Young Investigator Award, a 2008 Air Force Young Investigator Award, multiple best paper/video awards, and is a member of the 2008 class of Technology Reviews TR35.

TUESDAY, DECEMBER 9, 2008

2:30 PM

Building 2, Room 105

*Refreshments at 3:30 PM in Building 2, Room 349
(Applied Math Common Room)*



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