THE UNIVERSITY OF CHICAGO | THE COMMITTEE ON COMPUTATIONAL AND APPLIED MATHEMATICS

COLLOQUIUM

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Advances in Flight Simulation and Flow Instability

THURSDAY, October 19th, at 4:00PM

Jones 303, 5747 S. Ellis Ave. Chicago, IL 60637

ABSTRACT

A new era in flight is emerging that requires a more effective simulation strategy. Many modes of transportation are being developed industrially, including air-taxi drones and ground-effect transport. We describe an approach to simulating flight that is based on instabilities in flow and provides a new view of turbulence based on chaotic dynamics of computed flow profiles. The method we use is the Reynolds-Orr definition of instability that is more general than what is commonly used to define flow instability. We show that our results correlate well with what can be observed by both experiment and direct numerical simulation.

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