学术报告

Computational Forensics for Airplane Crashes

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Time：15:00-17:00, May 11 (Friday) 2018

Venue：Room 108, Center for Applied Mathematics

Abstract：In this talk, the speaker will discuss how to use large-scale scientific computation to conduct event-reconstruction and forensics for airplane crashes. The methodologies and tools involved are mathematical modeling, algorithm development and supercomputing. Four cases of airplane crashes will be discussed:

(1) Malaysia Airlines missing Flight MH370;

(2) Germanwings Flight 9525 pulverizing crash;

(3) Dallo Airlines Flight 159 laptop bombing;

(4) Malaysia Airlines Flight MH17 missile-shotdown.

The mathematical models involved are: fluid dynamics, solid mechanics of viscoplasticity and fracture, and explosion. The primary software platforms are OpenFOAM and LS-DYNA based on, respectively, the Finite Volume and the Finite Element methods. Visualization is done by using Paraview. All the computations were carried out on the supercomputers at Texas A&M University's High Performance Research Computing Center.

Video animations based on supercomputing will be given, along with interpretations of the physical phenomena.

欢迎大家参加!