SEMINAR SERIES

北京大学应用物理与技术研究中心
高能量密度物理数值模拟教育部重点实验室

Modeling and Simulation of the Inflation of Supersonic Parachutes for Mars Landing

报告人：黄政宇 助理教授（北京国际数学研究中心）

报告内容：

A high fidelity multi-physics Eulerian computational framework is presented for the simulation of supersonic parachute inflation for landing on Mars. Several adaptive mesh refinement (AMR)-enabled, large edge simulation (LES)-based simulations of the full-size disk-gap-band (DGB) parachute inflating in the low-density low-pressure Martian atmosphere are reported. The comparison of the drag histories and the first peak forces between the simulation results and experimental data collected during NASA Curiosity Rover's Mars atmospheric entry shows reasonable agreements. This framework demonstrates the potential of using Computational Fluid Dynamics (CFD) and Fluid-Structure Interaction (FSI) based simulation tools for the future supersonic parachute design. In the context of such multidisciplinary engineering design problems, I will also discuss potential challenges and endeavors undertaken with the aid of AI-based tools.

报告人简介：

Zhengyu Huang (黄政宇) is an assistant professor at Beijing International Center for Mathematics Research at Peking University. Before joining Peking University, he conducted postdoctoral research at Caltech. He earned his bachelor's degree from Peking University, and completed his Ph.D. at Stanford University with a focus on computational mathematics and aerospace engineering. He currently works at the interface of computational mathematics, data science, and computational engineering.

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