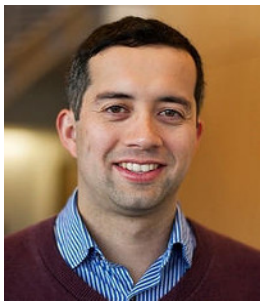
東北大学大学院工学研究科　次世代航空機研究センターからのお知らせ

TU Next Seminar in Applied Mechanics and Computational Engineering



ミシガン大学の Johnsen 助教授は，NSF の CAREER Award や ONR の Young Investigator Award などを受賞しており，混相流れやプラズマ流れ，圧縮性乱流や高次精度数値計算法に関して非常にアクティブに研究を進めている若手研究者です． どうぞ是非奮ってご参加ください．

http://www-personal.umich.edu/~ejohnsen/home.html

日時：2017 年 6 月 27 日（火）, June 27th 2017, 16：00-17：00

場所：東北大学大学院工学研究科　機械・知能系共同棟 611 号室

Research Building MAE 611, Mechanical and Aerospace Engineering

講師：Dr. Eric Johnsen (Assistant Professor, University of Michigan)

演題：High-fidelity simulation of compressible multiphase flows and applications to cavitation erosion

要旨

In problems ranging from cavitation erosion to liquid fuel atomization in high-speed propulsion systems, compressible flow features such as shock and rarefaction waves interact with gas-liquid interfaces. The extension of shock capturing, the established numerical approach to accurately represent shock waves, is not straightforward for compressible gas-liquid flows. We present a interface-capturing approach capable of accurately and robustly representing shock waves and high-density-ratio material interfaces (including solids), without generating spurious pressure or temperature errors at material discontinuities. Our spatial scheme is high-order accurate in smooth regions and nominally non-dissipative in that high-order discontinuity capturing is applied only at sharp gradients detected by a discontinuity sensor. We use this approach to investigate the basic flow physics of gas bubble collapse near solid surfaces and the break up of liquid droplets by the passage of a shock wave. We identify various means of structural damage produced by cavitation bubbles or liquid droplets by investigating the bubble/droplet dynamics, and the shock waves and heat transfer thereby produced. We show that the high temperatures produced by collapsing bubbles may play a role on damage to soft materials (e.g., elastomeric coatings).

※英語による講演会です　事前申込不要です

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