OpenFOAM & Combustion Simulation

High Fidelity Simulations of Turbulent and Multiphase Flows using OpenFOAM

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Host: **Prof. Zhi Chen (Peking University)**

Register: https://nus-sg.zoom.us/webinar/register/WN_PSOOigOsTbCuqFfF-vHJSg

Abstract

OpenFOAM serves as a convenient vehicle to develop high fidelity simulation tools to predict complex reacting flow physics including turbulence and multiphase phenomena. This presentation will provide an overview of modeling activities at CCRC, KAUST tackling some combustion and spray problems of current interest, such as turbulent ammonia flames and multiphase flows involving droplets and spray dynamics. Key scientific findings as well as progress in computational and physical submodels will be highlighted and discussed.

About the Speaker

Professor Hong G. Im received his B.S. and M.S. from Seoul National University, and Ph.D. from Princeton University. After postdoctoral researcher appointments at the Center for Turbulence Research, Stanford University, and at the Combustion Research Facility, Sandia National Laboratories, he held assistant/associate/full professor positions at the University of Michigan. He joined KAUST in 2013 as a Professor of Mechanical Engineering. He is a recipient of the NSF CAREER Award and SAE Ralph R. Teetor Educational Award, and has been inducted as an International Member of the National Academy of Engineering of Korea, a Fellow of the Combustion Institute and American Society of Mechanical Engineers (ASME) and an Associate Fellow of American Institute of Aeronautics and Astronautics (AIAA). He has also served as an Associate Editor for the Proceedings of the Combustion Institute, and currently on the Editorial Board for Energy and AI. Professor Im's research and teaching interests are primarily fundamental and practical aspects of combustion and power generation devices using high-fidelity computational modeling. Current research activities include direct numerical simulation of turbulent combustion at extreme conditions, large eddy simulations of turbulent flames at high pressure, combustion of hydrogen and e-fuels, spray and combustion modeling in advanced internal combustion engines, advanced models for pollutant formation, and plasma-assisted combustion.