COMBUSTION WEBINAR

Transported PDF simulations of turbulent flames with uncertainty quantification

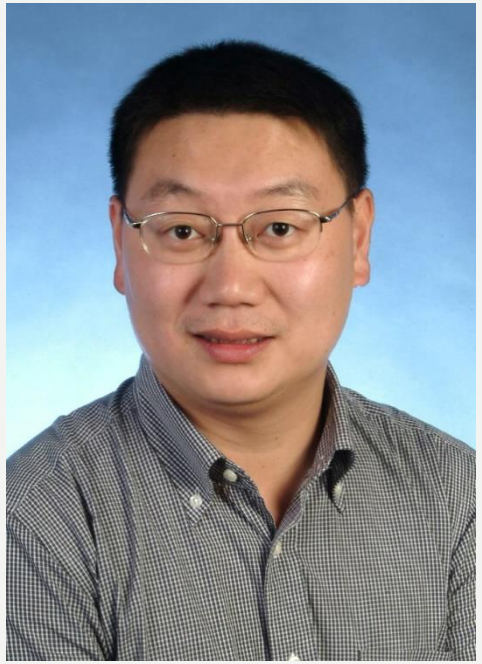
Speaker: Zhuyin Ren, Tsinghua University

Time: Jan. 29th, 2022

10 am EDT; 16:00 Paris; 22:00 Beijing.

Zoom Meeting ID: 959 5515 8623
Passcode: combustion
Check *https://sun.ae.gatech.edu/combustion-webinar*
for details or directly contact wenting.sun@aerospace.gatech.edu

COMBUSTION WEBINAR



Biography: Dr. Zhuyin Ren received his Ph.D. in Mechanical Engineering from Cornell University in 2006. He has been a Professor of the Center for Combustion Energy at Tsinghua University since 2013. Prior to that, he was a fluid specialist at ANSYS Fluent, a mechanical engineer at GE Global Research Center, and an assistant professor at the University of Connecticut. His research interests include turbulent combustion modeling and high-fidelity simulations with detailed chemistry. Dr. Ren received "Bernard Lewis Fellowship" from the Combustion Institute in 2008 and now serves on the Editorial Board of Combustion Theory and Modelling and Journal of Propulsion and Power.

Abstract: Combustion modeling is now playing an important role in the design and optimization of advanced combustion devices. For high-fidelity combustion modeling, it is essential, though challenging, to resolve the highly nonlinear turbulence-chemistry interaction and to predict the near-limit combustion phenomena and pollutants. This requires the accurate description of turbulent mixing as well as the use of detailed chemistry.

This talk will focus on presenting recent progress in transported PDF simulations of turbulent flames, specifically the scalar micro-mixing modelling and zone-adaptive combustion modelling. In addition, the propagation of physiochemical uncertainties through active subspace will be demonstrated for turbulent flame simulations.

Combustion Webinar Organization Committees

Advisory Committee

Yiguang Ju (Princeton University)
Fei Qi (Shanghai Jiao Tong University)
Philippe Dagaut (CNRS-INSIS)
Gautam Kalghatgi (Univ of Oxford/Saudi Aramco)
Med Colket (RTRC, Retired)
Chung K. (Ed) Law (Princeton University)
Katharina Kohse-Höinghaus (University of Bielefeld)
Kaoru Maruta (Tohoku University)
Kelly Senecal (Convergent Science)
Toshiro Fujimori (IHI Inc.)

Technical Committee

Wenting Sun (Georgia Tech) ***Co-Chair***
Lorenz R Boeck (FM global)
Liming Cai (Tongji University)
Zheng Chen (Peking University)
Matthew Cleary (The University of Sydney)
Stephen Dooley (Trinity College Dublin)
Tiegang Fang (North Carolina State University)
Aamir Farooq (KAUST)
Michael Gollner (UC Berkeley)
Wang Han (The University of Edinburgh)
Jean-Pierre Hickey (U. Waterloo)
Xinyan Huang (Hong Kong Polytech Univ.)
Tai Jin (Zhejiang University)
Tina Kasper (University Duisburg-Essen)
Isaac Boxx (DLR) ***Co-Chair***
Deanna Lacoste (KAUST)
Davide Laera (CERFACS)
Joseph Lefkowitz (Technion)
Qili Liu (Purdue University)
Yushuai Liu (IET, CAS)
Zhandong Wang (USTC)
Nicolas Noiray (ETH Zurich)
Guillermo Rein (Imperial College London)
Xingjian Wang (Tsinghua University)
Jun Xia (Brunel University London)
Huahua Xiao (USTC)
Dong Yang (SUSTech)
Suo Yang (University of Minnesota)
Peng Zhao (University of Tennessee, Knoxville)

Disclaimer

- The presentation materials and comments made by the lecturer and participants are only for research and education purposes.
- All presentation materials are the sole properties of the lecturer and the Combustion Webinar organizer, and cannot be published and disseminated without written approvals from both parties.
- This lecture may be recorded and released to public.

- **Please use Chat or Raise Hand to ask your questions.**
- **Please turnoff microphone. Webinar will be locked after 30 minutes.**
- **Recorded lectures are on *Combustion Webinar YouTube Channel***

https://www.youtube.com/channel/UCSsO7e9VIn__RejSiAPF0JA