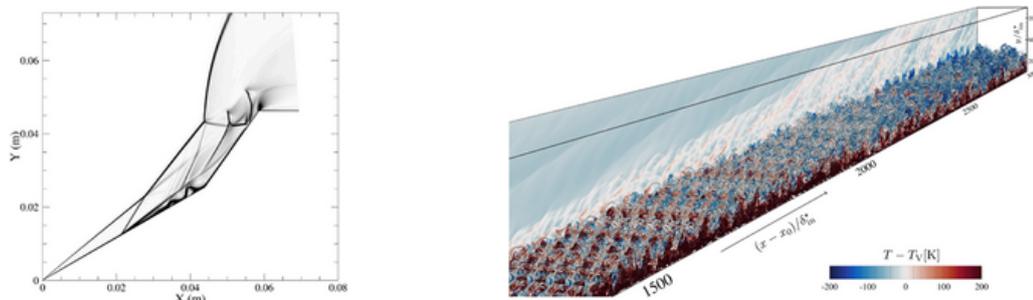# NUMERICAL MODELLING OF HYPERSONIC FLOWS

This webinar Introduces the fundamentals of thermochemical modeling and numerical simulation of high-temperature hypersonic flows in the laminar and turbulent regimes.



**Syllabus**

- Introduction to hypersonic flows
- Properties and thermophysical modeling of high-temperature flows
- Compressibility effects on high-speed turbulence
- Classical shock-capturing schemes
- High-order numerical schemes for compressible turbulent flows

**Target audience:** This webinar is addressed to graduate/undergraduate engineering students, aerospace Ph.D. students.

**Dates and timeline:**
09 December 2022, 09:00-18:00 CET

**Speakers**

**Francesco Bonelli** is a Research Fellow in Fluid Dynamics with the Department of Mechanics, Mathematics and Management at Politecnico di Bari and a collaborative Postdoctoral Researcher at von Karman Institute for Fluid Dynamics. He received the M.S. degree in Mechanical Engineering and the Ph.D. degree in Industrial and Innovation Engineering from Università degli Studi della Basilicata in 2010 and 2014, respectively. He also worked as Postdoctoral Fellow with the Inter-University Department of Physics at Università di Bari. His research activity focuses on the study of high enthalpy flows involving gas surface interactions by using advanced thermochemical non-equilibrium models.

**Luca Sciacovelli** is an Assistant Professor at the DynFluid Laboratory of Arts & Métiers Institute of Technology. He received his M.S. degree in Mechanical Engineering from Politecnico di Bari in 2012, and his Ph.D. degrees in Industrial Engineering and Mechanical Engineering from Politecnico di Bari and Arts & Métiers, respectively, in 2016. He also worked as a Postdoctoral Fellow at California Institute of Technology / NASA Jet Propulsion Laboratory, and at Conservatoire National des Arts et Mètiers (CNAM). His research activity focuses on the study of real-gas and high-temperature effects on turbulent flows, and on the development of high-order numerical schemes for scale-resolving numerical simulations.

**Registration and Contacts**

**Course Code:** 20221209

This course is part of the 2022 institutional activity for AIDAA members. The registration requires the purchase of one of the packages described here https://www.aidaa.it/package-list, and the completion of the online form available on AIDAA webpage.

**Course platform:** Webex; a link will be sent via email as the registration is complete.
At the end of each course, **attendance certificates** will be sent to participants via email.

For further info, please, contact **academy@aidaa.it**