Italian Association for Wind Engineering

International Association for Wind Engineering

SOLARI LECTURES

Excellence and innovation in Wind Science and Engineering

At the end of 2020 the Italian Association for Wind Engineering lost one of its founding fathers and past Presidents. The whole international community of Wind Engineering lost one of its most distinguished members, and past president of the International Association for Wind Engineering. His scientific and institutional contribution has deeply marked the evolution of Wind Science and Engineering worldwide.

The Italian Association for Wind Engineering aims at celebrating and renewing his longest lasting legacy in innovating Wind Science and Engineering by excellent studies. The Solari Lectures are dedicated to emerging, innovative topics in and around the broad field of Wind Engineering, reviewed by excellent scholars.

The Lectures are hosted during the ANIV biannual International Conference on Wind Engineering IN-VENTO, under the umbrella of the International Association for Wind Engineering.

SOLARI LECTURE 2022

Politecnico di Milano, Dept. of Mechanics, Campus Bovisa, Lecture Hall De Carli
via Durando 10, Building B9 - Milan
September 4th, 2022, 5 p.m. CET

also streamed via Webex at this link

Detailed Programme

17:00 Opening of the Solari Lectures

Luca Bruno, ANIV President	Aims of the Solari Lectures
Ahsam Kareem, IAWE President **Shuyang Cao**, IAWE Secretary General	IAWE greetings
Davide and **Matteo Solari**	Welcome greetings
Alberto Zasso, In-Vento XVII Chairman	Welcome in Milan

17:15 Solari Lecture 2022

Guido Buresti
chairman of the lecture
Former full professor in Fluid Dynamics at Department of Civil and Industrial Engineering University of Pisa, Italy

Introduction to the lecture

Gianluigi Rozza
invited speaker
Full Professor in Numerical Analysis and Scientific Computing at SISSA MathLab International School for Advanced Studies (SISSA), Trieste, Italy

Reduced-Order Models in Wind Engineering:
fundamentals and applications

Engineers are continuously called to build simplified models of intricate problems and phenomena. They traditionally apply the so-called Simplified Physics Approach to build models and codify them. Wind Engineers often employ Proper Orthogonal Decomposition (POD), also in the wake of the referential works of Giovanni Solari. The so-called Reduced Order Models (ROMs) include the above and many other approaches. ROMs are useful to provide a deep insight into huge amount of experimental data harvested from wind tunnel tests or computational simulations, and/or to surrogate expensive high-fidelity models in uncertainty quantification, optimization or design-oriented applications. The lecture will provide a wide rigorous general modelling framework, and discuss the past, present and future applications in bluff body aerodynamics and wind engineering.

18:00 Discussion
18:30 Closure

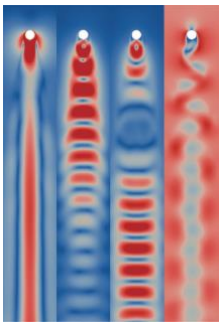
Gianluigi Rozza
Short Bio

Gianluigi Rozza is Full Professor in Numerical Analysis and Scientific Computing at SISSA MathLab – International School for Advanced Studies, Trieste, Italy.

Master of Science in Aerospace Engineering (2002) at Politecnico di Milano, PhD in Applied Mathematics (2005) at Ecole Polytechnique Fédérale de Lausanne, Switzerland.

Research Assistant (2002-06), Researcher and Lecturer (2008-12) at École Polytechnique Fédérale de Lausanne; Post Doctoral Associate Researcher (2006-08) at Massachusetts Institute of Technology, Boston MA, USA; Researcher (2012-14) and Associate Tenured Professor (2014-17) at International School for Advanced Studies, Trieste, Italy.

His research interests include: Numerical Analysis, Numerical Simulation, Scientific Computing; Reduced Order Modelling and Methods with special focus on viscous flows and complex geometrical parametrizations; Efficient Reduced-Basis Methods for parametrized PDEs and a posteriori error estimation; Computational Fluid Dynamics with applications in Aero-Naval-Mechanical Engineering and Environmental Fluid Dynamics; Fluid-Structure Interaction Problems; Parametrized Navier-Stokes Equations for Bifurcations and stability of flow; Optimal Control, Flow Control based on PDEs, Optimal Shape Design, Shape Optimization, Shape Reconstruction, Shape Registration; Uncertainty quantification, data assimilation, parameter estimation; Machine Learning, Deep Learning, Neural Networks.



Author of about 180 scientific papers receiving more than 4500 citations (H-index 32)

Honors and awards: Recipient of Bill Morton CFD Prize (2004) by Institute of Computational Fluid Dynamics, University of Oxford (UK); ECCOMAS Ph.D Award (2005) by European Community on Computational Methods in Applied Sciences; Springer Computational Science and Engineering Prize (2009); ECCOMAS Jacques Louis Lions Award in Computational Mathematics (2014); ERC consolidator grant ‘Advanced Reduced Order Methods with Applications in Computational Fluid Dynamics’ (AROMA-CFD, 2016-2021); ERC-Proof of Concept Grant ‘Advanced Reduced Groupware Online Simulation’ (ARGOS, 2022).