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**DICEA**

DIPARTIMENTO DI INGEGNERIA  
CIVILE E AMBIENTALE

International doctorate **Civil and Environmental Engineering**

**ONLINE SEMINAR**

**19<sup>th</sup> March 2021 - h.11:00-12:00**

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# Isogeometric Analysis: Advanced modeling and applications with a special focus on shells and laminates

**Prof. Alessandro Reali**

**Department of Civil Engineering and Architecture, University of Pavia**

## **ABSTRACT:**

Isogeometric Analysis (IGA) is a relatively recent simulation framework originally proposed by TJR Hughes and coworkers (2005) with the aim of bridging the gap between Computational Mechanics and Computer Aided Design. In addition, thanks to the high-regularity properties of its basis functions, IGA has shown a better accuracy per degree-of-freedom and an enhanced robustness with respect to standard finite elements in a number of applications ranging from solids and structures to fluids and fluid-structure interaction.

This lecture aims at giving a brief introduction to the main concepts of IGA, then focusing on some recent advances and applications. Special attention will be given to shell structures and to the advantages that may be obtained by means of IGA (also in the context of fluid-structure interaction). The last part of the lecture will be finally devoted to a simple, accurate, and inexpensive simulation technique for laminates allowed by the unique IGA features.

**Dipartimento Ingegneria Civile e Ambientale**

Via di S. Marta, 3 – 50139 Firenze

Segreteria +39 055 2758811 - 2758812 | e-mail: [segreteria.dicea@unifi.it](mailto:segreteria.dicea@unifi.it) posta certificata: [dicea@pec.unifi.it](mailto:dicea@pec.unifi.it)

P.IVA | Cod. Fis. 01279680480

## SHORT BIO OF PROF. ALESSANDRO REALI

Institution: **Department of Civil Engineering and Architecture, University of Pavia (UniPV)**

Email: [alessandro.reali@unipv.it](mailto:alessandro.reali@unipv.it)

Webpage: <http://www.unipv.it/alereali>

### Current academic positions:

Since 2019: **Rector's Delegate for International Research and Ranking** (UniPV)

Since 2018: **Dean of the Department of Civil Engineering and Architecture** (UniPV)

Since 2017: **Coordinator of the PhD program in “Design, Modeling, and Simulation in Engineering”** (UniPV)

Since 2016: **Full Professor of Solid and Structural Mechanics** (UniPV)

### Award and honors (selected):

2020: **Euler Medal** (European Community on Computational Methods in Applied Sciences - ECCOMAS)

2019: **TUM Ambassador** (President of the Technical University of Munich - TUM)

2014-2018: **ISI Highly Cited Researcher** (5 times, Thomson-Reuters/Clarivate)

2018: **Bruno Finzi Prize** (Istituto Lombardo Accademia di Scienze e Lettere)

2017: **Knight Commander of the Order of Merit of the Italian Republic** (President of the Italian Republic)

2016: **IACM Fellows Award** (International Association for Computational Mechanics - IACM)

2015: **Hans Fischer Fellowship** (Institute for Advanced Study - IAS, TUM)

2014: **John Argyris Award for Young Scientists** (IACM)

2013: **AIMETA Junior Prize** (Italian Association of Theoretical and Applied Mechanics - AIMETA)

2012: **O.C. Zienkiewicz Award** (ECCOMAS)

2004-2012: **J.T. Oden Faculty Fellowship** (8 times, Institute of Computational Engineering and Sciences – ICES, UT Austin)

2010: **ERC “Ideas” Starting Independent Researcher Grant** (European Research Council - ERC)

### Scientific production (summary):

Since 2005: Author of more than 130 articles in peer-reviewed international journals, with more than 10,000 citations (h-index: 45) according to Google Scholar, about 7,000 (h-index: 39) according to Scopus, and more than 6,000 (h-index 37) according to ISI Web of Knowledge

Since 2004: Author of 75 seminars/lectures at internationally renowned institutions and 25 plenary/keynote lectures at international conferences, as well as author/coauthor of more than 400 contributions (more than 300 invited) at conferences, workshops, seminars.

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È possibile anche chiamare 62.109.219.4 e immettere il numero della riunione.

Accedi per telefono

+39-069-974-8087 Italy Toll

390230410440 Italy Toll 2

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For additional information or connection problems, please contact [enzo.marino@unifi.it](mailto:enzo.marino@unifi.it)