POLITECNICO MILANO 1863

*The **Department of Civil and Environmental Engineering**, PhD programme in Structural, Seismic and Geotechnical Engineering, is glad to invite you to the following:*

Colloquia Doctoralia Seminar
PhD Final Exam – Fourth Session

9th March 2017

12:30 – 13:30
*Speaker: **José Antonio Reinoso Cuevas**,*
Universidad de Sevilla

14:30 – 15:30
*Speaker: **Marco Paggi**,*
IMT School for Advanced Studies Lucca

The seminars take place in the Beltrami Room – Building 5, Campus Leonardo

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Failure analysis in thin walled structures: smeared-based crack and delamination models

Prof. José Antonio Reinoso Cuevas (Universidad de Sevilla)

Fracture of thin-walled components can notably limit the performance of their corresponding engineering systems. This seminar is devoted to the analysis of failure in shells using novel smeared damage modelling strategies. In particular the main contents of the seminar concern: (1) the formulation of a consistent anisotropic damage model for laminated fiber-reinforced composites relying on the 3D-version of the Puck failure criterion, and (2) the development of a new phase field model of brittle fracture for large deformation analysis of shells relying on a mixed enhanced assumed strain (EAS) formulation. Special attention is devoted to the applicability and versatility of such capabilities, emphasising the principal aspects with regard their formulation and numerical implementation.

Durability of photovoltaic modules: modeling, simulation and experiments

Prof. Marco Paggi (IMT School for Advanced Studies Lucca)

Photovoltaic modules based on Silicon solar cells show various sources of mechanical, optical and electrical degradation when exposed to the environment, including cracking in solar cells, decohesion of the backsheet, and aging of the polymer used to encapsulate the solar cells. These issues are currently under examination of the Task 13 technical group on Performance and Reliability of Photovoltaic Systems of the International Energy Agency. They are also under investigation within the ERC Starting Grant project "Multi-field and Multi-scale Computational Approach to Design and Durability of Photovoltaic Modules" supported by the European Research Council.
In this seminar, experimental evidence of degradation phenomena is provided, along with novel mathematical models and computational methods for their effective simulation and understanding.

Short Bio

Prof. José Antonio Reinoso Cuevas

Dr. Reinoso is Assistant Professor of the Elasticity and Strength of Materials Group at Univesidad de Sevilla (Spain). Socrates-Erasmus Scholar at the University of Bristol, UK (2006-07), fellow of the P06-TEP-02045 Excellence Project of the Regional Government of Andalusia (2008-11) and postdoctoral researcher at Leibniz Universität Hannover, Germany (2012-2014). He is Assistant Professor of University since January 2015 and researcher/collaborator in 8 research projects funded by public bodies, as well as in various technology transfer projects. Author of 3 books/monographs, more than 20 papers in peer-review international journals and more than 30 contributions to national/international congresses. His main lines of research focus on the development of numerical models for the structural modeling of composite laminars and models of interlaminar and intralaminar damage in composite materials.

Prof. Marco Paggi

Marco Paggi is Associate Professor of Structural Mechanics at the IMT School for Advanced Studies Lucca, Italy, where he is the director of the research unit Multi-scale Analysis of Materials (MUSAM) and he serves as Director's Delegate for Research and Technology Transfer. He is the principal investigator of an ERC Starting Grant 2012 and an ERC Proof of Concept 2016 by the European Research Council, focusing on reliability and durability of Silicon photovoltaics. He is member of the Task 13 Committee on Performance and Reliability of Photovoltaic Systems of the International Energy Agency, Photovoltaic Power Systems Programme (IEA-PVPS). His research interests span various areas of continuum mechanics, with special focus on computational methods for nonlinear partial differential equations, interface mechanical problems, contact mechanics, fracture mechanics, material models for renewable energy applications, multi-physics simulations.