**AVVISO DI SEMINARIO**

Si comunica che in data Venerdì 7 Giugno alle ore 10.00 presso l’aula consiglio dell’ex DICAM il Prof. Antonio Marí Bernat della School of Civil Engineering of Barcelona terrà un seminario dal titolo

**A UNIFIED SHEAR – PUNCHING MECHANICAL MODEL FOR DESIGN AND ASSESSMENT OF STRUCTURAL CONCRETE MEMBERS”.**

Docenti, dottorandi e studenti sono invitati a partecipare.

Prof. Piero Colajanni

**COURSE SUMMARY:**

For daily engineering practice, simple but accurate models are needed for designing new structures or assessing existing structures in a safe, reliable, economical and easy way. Mechanical models are especially adequate for design purposes since they provide an insight into the structure behavior, incorporate the most relevant parameters involved and can be extended in a natural way to incorporate new technical advances.

In this presentation a mechanical model for shear strength of reinforced and prestressed concrete beams and one-way slabs, with and without stirrups is presented. The model developed, called Multi-Action Shear Model (MASM), incorporates the shear transferred by the concrete compression chord (Vcc), by aggregate interlock along the critical shear crack (Vcw), by dowel action in the longitudinal reinforcement (Vcl) and by the transverse reinforcement (Vs). The theoretical bases are presented as well as the simplifications made to derive a simpler, but accurate, design model called Compression Chord Capacity Model (CCCM).

The model has been extended to slender beams with T section shape, deep beams, beams subjected to point loads near the supports or to fatigue loading, FRP reinforced concrete beams with and without stirrups and to SFRC beams. Furthermore, the shear model has been extended to punching of RC slabs with and without transverse reinforcement. The model has been verified by comparing its predictions with a large number of shear and punching tests results, most included in the recently ACI-DAfStb databases. Very good results have been obtained in all cases, resulting in lower scatter and better accuracy than current ACI, EC2 and MC2010 provisions. Some aspects not yet sufficiently well solved and future developments will be finally discussed.

**Dr. Antonio Marí Bernat**

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Dr. Antonio Marí Bernat is Professor of Structural Concrete at the School of Civil Engineering of Barcelona and convenor of the Structural Technology Research Group. Previously he had been Dean of the School of Civil Engineering of Barcelona and Vice-Rector for Research of UPC.

He has conducted experimental and theoretical research on the behavior, analysis and design of safe and sustainable reinforced and prestressed concrete structures. His contributions include the development of conceptual mechanical models for shear design and assessment as well as numerical models for the non-linear and time dependent analysis of sequentially constructed structures, including the effects of shear stresses, reinforcement corrosion and strengthening interventions. He has written 6 books and published more than 70 scientific papers in SCI peer-reviewed international Journals. He has collaborated in the design and construction of singular and innovative precast solutions for bridges and wind towers, and in the assessment, strengthening and repair of concrete structures.

He was the General Reporter of the current Spanish Concrete Code EHE-08, and participated as member of the FIB Task group TG 4/1 “Serviceability Models” in the development of the Model Code 2010. Currently he is an invited member of CEN/TC250/SC2/WG1/TG4 (Shear, torsion and punching) working on the update of Eurocode 2.