

CIVIL ENGINEERING SEMINAR

Wednesday 7th May 2014 4pm
A401 – School of Engineering



Damage-based design of steel structures.

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ABSTRACT

A new method for seismic design of plane steel moment resisting framed structures is developed. This method is able to control damage at all levels of performance in a direct manner. More specifically, the method: a) can determine damage in any member or the whole of a designed structure under any given seismic load, b) can dimension a structure for a given seismic load and desired level of damage and c) can determine the maximum seismic load a designed structure can sustain in order to exhibit a desired level of damage. In order to accomplish these things, an appropriate seismic damage index is used that takes into account the interaction between axial force and bending moment at a section, strength and stiffness degradation as well as low cycle fatigue. Then, damage scales are constructed on the basis of extensive parametric studies involving a large number of frames exhibiting cyclic strength and stiffness degradation and a large number of seismic motions and using the above damage index for damage determination. Some numerical examples are presented to illustrate the proposed method and demonstrate its advantages against other methods of seismic design.

ABOUT THE SPEAKER

Dr Kamaris completed his PhD in Seismic Design of Steel Structures (2011) at the Department of Civil Engineering of the Univ. of Patras (Greece). He worked as a Post-Doctoral Researcher (2012-2013) in C.E.A. (Commissariat a l'Energie Atomique et aux Energies Alternatives)-Saclay (France). Now he works with Dr Karavasilis as a Marie Curie Fellow on: "Experimental and analytical studies on steel-concrete composite bridges".

This seminar is open to all and refreshments are provided. For more information, contact Dr Stefano Utili by email at s.utili@warwick.ac.uk

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