EVENING MEETING

AT

INSTITUTION OF CIVIL ENGINEERS
ONE GREAT GEORGE STREET, WESTMINSTER, LONDON SW1P 3AA

ON

WEDNESDAY 31ST JANUARY 2018, 6PM

From Hazard to Loss: Treatment of Uncertainties in the Earthquake Loss Estimation of Building Portfolios

Speaker:

Dr Luis Sousa
AIR Worldwide

Chaired by:

Prof. Tiziana Rossetto
UCL

Synopsis Overleaf

NON-MEMBERS OF THE SOCIETY ARE WELCOME TO ATTEND
Please note that there is no charge to attend.
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Synopsis

Earthquake losses registered worldwide over the last century have triggered crippling effects on the economic and social systems of wealthy and undeveloped countries alike. In the face of ever increasing impacts, earthquake loss modelling is essential for the prediction, prevention and mitigation of the adverse effect of future seismic events. Given the complex nature of the process, it is utopian to seek absolute certainty when gathering the required resources. As an inherent property of any analytical process, uncertainty must not be ‘removed’ from the equation. Therefore, seismic risk assessments can only be meaningful if coupled with its accompanying analysis of uncertainty, be that aleatory or knowledge-based. In addition to the continued improvement in the characterization of random and epistemic uncertainties in seismic hazard, recent years have seen a major swing in emphasis towards the explicit inclusion of uncertainties in the performance assessment of buildings. Building upon the link between seismic hazard and ground motion selection, these efforts have improved the treatment of record-to-record variability and/or the random nature of geometric and structural building parameters. However, several questions remain entirely unanswered or lack a deeper understanding.

Within the context of building portfolio loss estimation, this talk will explore issues relating to (1) the impact on building fragility of hazard-consistent record selection and hazard disaggregation, and (2) uncertainty characterisation in loss metrics and fragility analysis. It highlights shortcomings in the state-of-art and the implications of this for earthquake loss modelling.

Speaker

Dr Luis Sousa

Dr Luis Sousa is Senior Research Associate at AIR Worldwide. He is an earthquake engineer and catastrophe risk analyst with technical and management experience in the fields of earthquake engineering, seismic hazard and risk assessment; and development of methodologies and algorithms to analyse the impact of earthquakes on buildings. During his career he has had the opportunity to participate in practical application and International research projects, both as a structural engineer and leading seismic risk analyst. He has developed and coordinated the structural and seismic design and retrofit of several complex buildings; as well as the evaluation of seismic risk at regional and country levels in 36 European countries. Dr Sousa obtained his PhD from the University of Porto on the subject of “Development of Innovative Methodologies for the treatment of Uncertainty in Portfolio Risk Assessment”. He spent 7 months as a Researcher at the EUCentre in Pavia (Italy) and has worked for several engineering and risk consulting firms (Arup London, RED - Risk Engineering + Design in Italy, Afaconsult in Portugal) before joining AIR Worldwide in his current post in 2017.