

CIVIL ENGINEERING SEMINAR

Wednesday 5th March 2014 4pm
A401 – School of Engineering



Novel numerical and analytical methods for geohazards assessment.

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ABSTRACT

Geohazards assessment is within the research priorities identified by Horizon 2020. Landslides and landslide induced debris flows are one of the most dangerous and challenging geohazards that civil engineers have to face. In the seminar, recent computational developments in the Distinct Element Method to account for 3D non – spherical particle shapes and fluid – particle coupling will be presented. Also a new methodology to model 3D complex jointed rock masses in an efficient way will be introduced. These developments enable to model landslide triggering and debris flows in open source academic codes (e.g. YADE, ESyS) in novel ways.

Analytical methods based on the limit analysis upper bound approach can be used under simplified assumptions to validate the ground failure mechanisms predicted by the DEM. An application of this methodology to slopes subject to tensile cracks will be presented. Applications of the methodologies to novel techniques for landslide hazard assessment and mapping will also be presented.

ABOUT THE SPEAKER

Dr Stefano Utili is currently Associate Professor at the University of Warwick (UK). Prior to that, he was a lecturer at University of Oxford (2008-2011) working closely with Prof. Houlsby. He spent 2 years as post-doctoral researcher (2006-2008) at University of Strathclyde (Glasgow, UK). He graduated at Politecnico di Milano (Milan University of Technology) where he also took his PhD (2004) under the supervision of Prof. Roberto Nova working on the use of the Distinct Element Method (DEM) and the limit analysis upper bound method to predict landslide onset and debris flows.

His main research interests are: the systematic inclusion of the effect of cracks in slope stability calculations for soils and rocks via limit analysis and DEM; the modelling of fast slides and debris flows; novel analytical and numerical methods for tunnelling.

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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