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Civil Engineering Research Group

Invitation to Seminar

• Pore network modelling of flow and solute transport in porous media

Flow and solute transport through porous media have been studies using different methodologies. In this research a pore network model capable of simulating flow and solute transport through porous media in all flow regimes; laminar, transition and turbulent has been developed. Using pore network modelling, any porous media can be simplified into large pores (pore bodies) connected to each other's by narrow pores (pore throats), then simple analytical or semi-analytical flow equations can be applied to simulate flow, pressure losses and solute transports at the pore scale. Moreover, the medium parameters (e.g. permeability and friction coefficient) at a Macro scale can be determined. The simplification done to the porous media allows the investigation of medium and flow properties at a micro scale and can make a significant reduction in the simulation time and the computational resources needed compared to other methodologies.

Mr Amro El-Zehairy PhD student, Civil Engineering, the University of Warwick

Amro has a BSc in Civil Engineering with Honor's Degree from the Faculty of Engineering, Mansoura University, Egypt and an MSc in Water Resources & Environmental Management with Distinction from the Faculty of Geo-information Science and Earth Observation (ITC), Twente University, Enschede, Netherlands. He is also an assistant lecturer in the Faculty of Engineering, Mansoura University since 2009. Amro is doing his PhD at the school of Engineering, Warwick University and is supervised by Dr Mohad Mousavi Nezhad and Prof. Ian Guymer.

• Failure mechanisms & development of catastrophic rockslides triggered by precipitation & open-pit mining in Emei, Sichuan, China

Two deadly rockslides, triggered by heavy precipitation and open-pit mining, were reported in Emei County, Sichuan Province, China, from 2011 to 2015. About 6.0 million m^3 of rock detached from the upper slopes, pushed the pre-sliding deposits, and hit the opposite mountains at average velocity of 18 km/h to 36 km/h. Detailed field investigation studies suggest that the high-speed consequent bedding rockslides were triggered by the failure of rock mass, which were influenced by the engineering activities and climate change. Key contributing factors were weathered and fragmented basalts that were affected by open-pit mining and frequent blasting, as well as the weak underlying tuffs with swell-shrink potential. Persistent rainfall was the direct trigger in initiating and reactivating the landslide. Water affected the slope stability by increasing the slope material's unit weight and penetrating into joints and cracks to make the tuffs degrade and causing a reduction in effective stress reduction. This presentation gives an insight into large-scale consequent bedding rockslides associated with the interaction between the rainfall and open-pit mining slopes instabilities.

Mr Derek Ma PhD student, Civil Engineering, the University of Warwick

Derek Ma, PhD candidate at University of Warwick. Start 2017. He completed his Bachelor degree of Engineering in 2013 and obtained his first class Master degree of Engineering in Geological Engineering from Southwest Jiaotong University in China in 2016. His Master dissertation is focused on the reliability analysis of landslide in Tibet plateau by using Monte-Carlo simulation and numerical modelling. After his Master degree, he worked as a teaching assistant in the Southwest Jiaotong University and collaborated with China Geology Survey to do some research about the failure mechanism of consequent bedding rockslides. At the same time, he visited the University of Canterbury to do academic research in New Zealand. Currently, He is pursuing his PhD degree in the research direction on the reliability and stability analysis of engineering slopes and landslides.

Wednesday 7 March 2018, 12.00pm-12.50pm

Room A401 Engineering Building

The seminar is open to all.
For more information, contact Dr Rezania (m.rezania@warwick.ac.uk).