

THE UNIVERSITY



OF HONG KONG

DEPARTMENT OF CIVIL ENGINEERING

SEMINAR

Principal Stress Rotations and Their Applications in Geotechnical Engineering

Dr. Yunming Yang

Associate Professor, Department of Civil Engineering
University of Nottingham Ningbo, China

Date: June 19, 2024 (Wednesday)

Time: 10:30 a.m. – 11:30 a.m.

Venue: Room 632C, 6/F Haking Wong Building, The University of Hong Kong

ABSTRACT

The Principal Stress Rotation (PSR) occurs in numerous geotechnical engineering applications, such as soil responses under earthquake strike, wave-seabed interactions, study of slope stability, pile-soil interactions, et al. It is well accepted that the PSR can create the non-coaxiality and additional displacements in soil. Therefore, neglecting the PSR can lead to unconservative results in numerical computations and in engineering practice. Further, there are multiple dimensional PSRs in many cases, which is rarely studied. Comprehensive and detailed investigation of both one-dimensional PSR and multiple dimensional PSRs in soil and their impacts on geotechnical engineering applications are presented in the seminar. The methods used include experimentation, elasto-plastic constitutive modelling, the discrete element method and the finite element method. Particularly interesting are the study of multiple dimensional PSRs and the use of Variable Direction Direct Cyclic Simple Shear tester (VDDCSS), manufactured by GDS UK. The results indicate that soil responses are different under one-dimensional PSR and multiple dimensional PSRs.

ABOUT THE SPEAKER

Dr Yang is an associate professor at the University of Nottingham Ningbo China. He graduated from Dalian University of Technology with a BEng in 1993 and a MSc in 1996. He obtained his PhD from the University of Oklahoma in 2003. From 2003 to 2011, he worked as a research fellow at the University of Nottingham UK, a lecturer at the University of Edinburgh, a senior research scientist at Chinese Academy of Sciences. He has been working at the University of Nottingham Ningbo China since 2011. He has a wide range of research interests, including elasto-plastic constitutive modelling, numerical integration of soil models, the finite element method and the discrete element method, granular solid flow in silos, et al. His current research interest is the study of soil responses under multiple PSRs by using various methods. As the first and corresponding authors, he published approximately 40 articles in prestigious international journals of soil mechanics and geotechnical engineering. As the principal supervisor, he supervised seven PhD students to completion, who all studied the PSRs by using different methods in different applications.

- ALL ARE WELCOME -