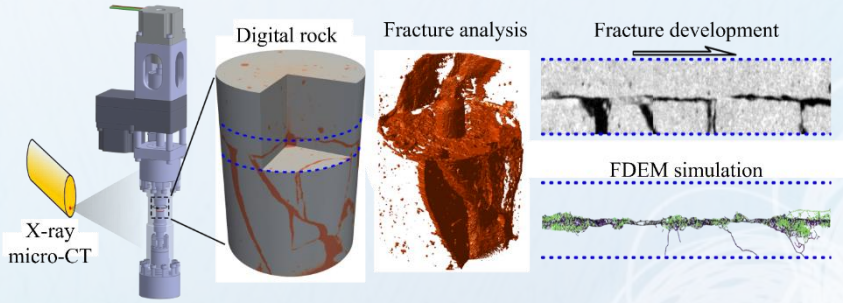
Anatomy of a Laboratory Fault

Dr. Qi ZHAO
(趙奇博士)

The Hong Kong Polytechnic University

We developed a novel in-situ rotary shear apparatus under micro-CT that is capable of visualizing the specimen while conducting shear experiments. This apparatus is used to obtain time-lapse observations of a laboratory fault subject to shear deformation. Machine learning methods are employed to perform quantitative CT image analysis. The hybrid finite-discrete element method (FDEM) is utilized to recreate the experimental results and improve the interpretations on the evolution of stress conditions on the rough fault surface. We show that surface roughness plays a dominant role in the frictional behaviour, and we established the energy budget of the slipping events. Our results provide crucial information on the underlying mechanisms responsible for the loss of shear stability of a rough fault.



24 May 2023

11:30 a.m.

Conference Room, 3/F,
Mong Man Wai Building

Zoom Link (Mixed-mode)

ID: 992 4969 9833 Passcode: 983837

EARTH AND ENVIRONMENTAL SCIENCES PROGRAMME

Enquires: 3943 5494 eesc@cuhk.edu.hk