

2023 ARMA Future Leader Webinar Series

Every Two Weeks on Fridays 9-10 AM MT



10th lecture: July 28, 2023

Please reach out to shahrzad.roshankhah@utah.edu to get the Zoom meeting information.

Speaker: Qi Zhao

Title & Abstract:

Anatomy of a laboratory fault

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 laboratory fault.

Biography:

Dr. Qi Zhao is an assistant professor at the Hong Kong Polytechnic University (PolyU) in the Department of Civil and Environmental Engineering. He obtained his PhD degree at the University of Toronto and his PhD dissertation was awarded the Leopold Müller Award by the Austrian Society for Geomechanics and the Dr N.G.W. Cook PhD Dissertation Award by the American Rock Mechanics Association (ARMA). He worked as a postdoc at the University of Toronto and UC Berkeley before joining PolyU. His research centres around the study of the shear behaviour of rock discontinuities.

