

# Induced Seismicity and Remote Sensing for Characterisation of Geomechanical Systems

**Prof. Bing Li,  
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**Thursday, May 2, 2024, 9 a.m. Central Time**



Prof. Bing Li is an assistant professor in the Department of Civil and Environmental Engineering at the University of Western Ontario. He will speak on Thursday, May 2, 2024. The topic is “Induced Seismicity and Remote Sensing for Characterisation of Geomechanical Systems.”

## **Abstract**

The presentation covers a series of laboratory and field studies using indirect but readily available datasets to characterise and constrain the hydro-mechanical properties of rock masses. I will begin with a discussion of how nanoseismicity at the lab scale relates to direct visual observations of the initiation, propagation, and coalescence of cracks and micro-cracks in granite and shale. I will then present recent efforts to predict time of failure across a range of hydraulic fracturing experiments in granite using a random forest algorithm, followed by the development of a single-sensor transfer-learning framework for determining focal mechanisms at lab and field scales. I will then fully transition to the field scale and discuss the development of a grid-less method for inverting stress tensors from moment tensors in a heterogeneous stress field, and finally present a case study at the Raft River geothermal plant where inSAR is used to invert a fast hydromechanical model.

## **Biography**

Bing Li joined the Department of Civil and Environmental Engineering at the University of Western Ontario as an assistant professor in 2021. He is a research director at the Geotechnical Research Centre, with interests in geomechanical model calibration, slope stability in permafrost, and induced seismicity in mining, energy, and volcanic settings. Prior to joining Western, he was a postdoctoral fellow at the Seismological Laboratory at Caltech and served as a consulting geophysicist with Zanskar Geothermal and Total Energies. He obtained his Ph.D. from MIT in 2019 on high-resolution imaging and acoustic emissions in granite and shale fracture processes and his B.ASc. in Mineral Engineering from the University of Toronto in 2013.