16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics

July 21-26, 2024, Vancouver Convention Centre, Vancouver, British Columbia, Canada

MULTISCALE, MULTIFIELD, AND CONTINUUM-DISCONTINUUM ANALYSIS IN GEOMECHANICS

Haitao Yu[1] and Hui Wang*[2] and Eva Binder*[3] and Yiming Zhang*[4] and Yunteng Wang*[5] and Qiushi Chen*[6]

[1]*Tongji University*
[2]*Shanghai Jiao Tong University*
[3]*Linnaeus University*
[4]*Hebei University of Technology*
[5]*Universität für Bodenkultur Wien*
[6]*Clemson University*

MINISYMPOSIUM

Geomaterials, such as rock, soil, concrete, and timber are consisted of constituents, characterized by multiple length scales. Response and interaction of these constituents determines the macroscopic performance of these materials and the related structures. The latter are inevitably subjected to multifield effects, e.g. in terms of mechanical loading, temperature and moisture changes, and chemical reactions. These effects can lead to stresses and even micro-/macro-cracking, addressing the need of discontinuum analysis, apart from the continuum analysis. Therefore, this symposium is intended to provide a forum to present recent advances in geomechanical research, involving the aforementioned multiscale, multifield, and continuum-discontinuum analyses.

Topics within the scope of interests include, but not limited to, the following aspects:

- Multiscale modeling of geomaterials and the related structures, (i.e. concurrent/hierarchical modeling, domain decomposition, discrete/continuum coupling…);
- Advanced computing and simulation methods (hybrid physics & data, artificial intelligent, automation, probabilistic and statistical approaches, wavelet signal processing);
- Continuum and discontinuum modeling of soils, rocks, timber, and concretes;
- Advanced numerical methods or algorithms in soil-structure interactions;
- Multi-physical couplings between mechanical, hydraulic, hygroscopic, thermal processes, and chemical kinetics;
- Large-scale modeling and high-performance computing of geomaterials in underground structures.

Cross-disciplinary contributions are particularly welcomed.