



## Lei Sun

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### EDUCATION EXPERIENCE

- 09.2020 –present** Postdoc in Rock Engineering  
Department of Civil & Mineral Engineering, University of Toronto, Canada  
Supervisor: Prof. Giovanni Grasselli
- 09.2014 – 06.2020** PhD. in Geotechnical Engineering  
Department of Civil Engineering, Wuhan University, China  
Supervisor: Prof. Quansheng Liu and Prof. Xuhai Tang
- 10.2018 – 07.2019** International student  
Department of Civil & Mineral Engineering, University of Toronto, Canada  
Supervisor: Prof. Giovanni Grasselli
- 09. 2010 -06.2014** Undergraduate in Hydraulic Engineering  
College of Water Resource and Hydropower, Sichuan University, China

### JOURNAL PUBLICATION

- [1] Sun L\*, Tang X, Abdelaziz A, Liu Q, Grasselli G. Stability analysis of reservoir slopes under fluctuating water levels using the combined finite-discrete element method. *Acta Geotechnica* (2023).
- [2] Abdelaziz A, Ha J, Li M, Magsipoc E, Sun L\*, Grasselli G. Understanding hydraulic fracture mechanisms: From the laboratory to numerical modelling. *Adv. Geo-Energy Res.* 2023;7(1):66–8
- [3] Sun L\*, Tao S, Liu Q. Frost Crack Propagation and Interaction in Fissured Rocks Subjected to Freeze–thaw Cycles: Experimental and Numerical Studies. *Rock Mech Rock Eng* 2022;107(4):59.
- [4] Shao Z, Sun L\*, Aboyanah KR, Liu Q, Grasselli G. Investigate the Mode I Fracture Characteristics of Granite After Heating/LN<sub>2</sub> Cooling Treatments. *Rock Mech Rock Eng* 2022;55(7):4477–96.
- [5] Sun L\*, Liu Q, Tao S, Grasselli G. A novel low-temperature thermo-mechanical coupling model for frost cracking simulation using the finite-discrete element method. *Computers and Geotechnics* 2022;152(2):105045.
- [6] Sun L\*, Liu Q, Abdelaziz A, Tang X, Grasselli G. Simulating the entire progressive failure process of rock slopes using the combined finite-discrete element method. *Computers and Geotechnics* 2022;141(4):104557.
- [7] Sun L\*, Grasselli G, Liu Q, Tang X, Abdelaziz A. The role of discontinuities in rock slope stability: Insights from a combined finite-discrete element simulation. *Computers and Geotechnics* 2022;147(2):104788.
- [8] Aboyanah KR, Popoola AK, Abdelaziz A, Sun L\*, Ossetchkina E, Peterson K et al. Effect of pre-existing cracks on thermal cracking of granitic rocks under confinement. *Geomech. Geophys. Geo-energ. Geo-resour.* 2022;8(4):73.

- [9] Tang X, Tao S, Li P, Rutqvist J, Hu M, Sun L. The propagation and interaction of cracks under freeze-thaw cycling in rock-like material. *International Journal of Rock Mechanics and Mining Sciences* 2022;154(F2):105112.
- [10] Liu Z, Zhang M, Sun L<sup>\*</sup>, Ye S, Chen Z, Tang X. The Influence of Natural Joints on the Evolution of Fracturing Curves: From a Numerical Perspective. *Arab J Sci Eng* 2022;36:83.
- [11] Sun L<sup>\*</sup>, Tao S, Tang X, Liu Q. Simulation of the nonplanar three-dimensional thermal cracking using the finite element-meshfree method. *Applied Mathematical Modelling* 2021;99(4):106–28.
- [12] Sun L<sup>\*</sup>, Grasselli G, Liu Q, Tang X. Thermal cracking simulation of functionally graded materials using the combined finite–discrete element method. *Comp. Part. Mech.* 2020;7(5):903–17.
- [13] Sun L<sup>\*</sup>, Liu Q, Grasselli G, Tang X. Simulation of thermal cracking in anisotropic shale formations using the combined finite-discrete element method. *Computers and Geotechnics* 2020;117(6):103237.
- [14] Sun L<sup>\*</sup>, Grasselli G, Liu Q, Tang X. Coupled hydro-mechanical analysis for grout penetration in fractured rocks using the finite-discrete element method. *International Journal of Rock Mechanics and Mining Sciences* 2019;124(2):104138.
- [15] Liu Q, Sun L<sup>\*</sup>. Simulation of coupled hydro-mechanical interactions during grouting process in fractured media based on the combined finite-discrete element method. *Tunnelling and Underground Space Technology* 2019;84(2):472–86.
- [16] Liu Q, Sun L<sup>\*</sup>, Tang X. Investigate the influence of the in-situ stress conditions on the grout penetration process in fractured rocks using the combined finite-discrete element method. *Engineering Analysis with Boundary Elements* 2019;106(2):86–101.
- [17] Liu Q, Sun L<sup>\*</sup>, Tang X<sup>\*</sup>, Guo B. Modelling Hydraulic Fracturing with a Point-Based Approximation for the Maximum Principal Stress Criterion. *Rock Mech Rock Eng* 2019;52(6):1781–801.
- [18] Liu Q, Sun L, Tang X, Chen L. Simulate intersecting 3D hydraulic cracks using a hybrid “FE-Meshfree” method. *Engineering Analysis with Boundary Elements* 2018;91(3):24–43.
- [19] Liu Q, Sun L, Liu P, Chen L. Modeling Simultaneous Multiple Fracturing Using the Combined Finite-Discrete Element Method. *Geofluids* 2018;2018(4-5):1–20.

### **HONORS and AWARDS**

- Academic editor of *International Journal of Coal Science & Technology*
- Youth editor of *International Journal of Mining Science and Technology*
- Assistant editor of *Advances in Geo-Energy Research*
- Outstanding youth editor of *Advances in Geo-Energy Research* 2022
- 2023 USNCCM17 Travel Award