Qing Yin

Email: qingyin@stanford.edu
Webpage: web.stanford.edu/~qingyin

Research Interests

Computational mechanics:
- Brittle and viscous behavior of materials
- Geomaterials and soft condensed matter
- Multiscale modeling and bridging
- Numerical methods
  (FEM, phase-field model, MPM and physics informed AI approach)

Education

Stanford University, CA, USA
12/2020 Ph.D., Civil & Environmental Engineering
with Ph.D. minor in Computational Mathematics
06/2016 M.Sc., Civil & Environmental Engineering

Tianjin University, Tianjin, China
07/2014 B.S., Civil Engineering

Dissertation

A Framework for the Prediction of Long-Term Time-Dependent Deformation of Shale

Establish a theoretical and computational framework to scale the time-dependent behavior of shale, an organic-rich geomaterial with multiscale heterogeneity and anisotropy, from nanoscale indentation tests to millimeter scale triaxial tests.

Publications

1. **Yin**, **Q.**, Liu, Y. and Borja, R.I. (2020). Mechanisms of creep in shale from nanoscale to specimen scale. *Under review*

2. Borja, R.I., **Yin**, **Q.** and Zhao, Y. (2020). Cam-Clay plasticity. Part IX: On the anisotropy, heterogeneity, and viscoplasticity of shale. *Computer Methods in Applied Mechanics and Engineering*, 360: 112695.

3. Zhao, Y., Semnani, S.J., **Yin**, **Q.** and Borja, R.I. (2018). On the strength of transversely isotropic rocks. *International Journal for Numerical and Analytical Methods in Geomechanics*, 42(16): 1917-1934.

4. Xu, J., **Yin**, **Q.**, Shen, M., Wang, Z., Fu, D. and Hou, Z. (2016). A new experimental apparatus for the stability of compression bar based on electronic universal testing machine. *Journal of Experimental Mechanics*, 1: 16-24.

Presentations

10/2019 Creep-induced strain localization in shale
Society of Engineering Science 56th Annual Technical Meeting

10/2018 Multiscale modeling of time-dependent deformation of shale
Blume Center Affiliates/Alumni Meeting

11/2016 Macroscopic shear band in crystalline structures
Structural and Geomechanics Seminar

Teaching Experience

Spring 2018 Finite element methods for dynamic analysis, *TA*

Spring 2017 Plasticity modeling and computation, *TA*

Spring 2016 Computational poromechanics, *TA*

Summer 2018 Introduction to computational mechanics, *TA*

Winter 2019 Foundations and earth structures, *TA*

Service

Journal reviewer, *Rock Mechanics and Rock Engineering.*

Organizer, 2018 Blume Summer Seminars, Stanford University.

Student host, 2015 annual conference of the Engineering Mechanics Institute.

Awards

04/2017 Charles H. Leavell fellowship, Stanford University.

07/2016 John A. Blume research fellowship, Stanford University.

09/2014 Chiang Chen Overseas fellowship, Hong Kong.

04/2013 Meritorious winner, Mathematical Contest in Modeling, SIAM.

Code Development

GeoScale

A finite element code written in C++. It can simulate 3D/2D indentations (contact problems) as well as triaxial tests on heterogeneous materials associated with viscoplastic constitutive laws. It is capable of predicting the long-term time-dependent deformation of materials from the results of indentation tests. The code can be easily extended to include other constitutive laws and solve different problems.

References

Ronaldo I. Borja
Professor and Associate Chair
Department of Civil & Environmental Engineering
Stanford University
Phone: +1 (650) 723-3664
Email: borja@stanford.edu

Christian Linder
Associate Professor
Department of Civil & Environmental Engineering
Stanford University
Phone: +1 (650) 723-2918
Email: linder@stanford.edu

10/2020