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Associate Professor

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Professional Preparation

BS University of California, Davis. Civil Engineering, B.S. 2005, Davis, CA

MS Stanford University. Civil Engineering, 2007 Stanford, CA

MA Princeton University. Civil Engineering, 2008 Princeton NJ

PhD Northwestern University. Theoretical and Applied Mechanics, 2011, Evanston, IL

Appointment

Associate Professor, Columbia University 2020-current

Assistant Professor, Columbia University, 2014-2020

Senior Member of Technical Staff, Sandia National Laboratories, 2013-2014

Postdoctoral Appointee, Sandia National Laboratories, 2011-2013

Visiting Scholar, California Institute of Technology, 2010-2011

Selected Awards and Honors: IACM John Argyris Award for Young Scientists (2020), *NSF CAREER Award* (2019), *ASCE EMI Leonardo da Vinci Award* (2018), *Zienkiewicz Numerical Methods in Engineering Prize* (2017), *AFOSR Young Investigator Program Award* (2017), Dresden Fellowship, (2016), Sandia Recognition Award, Department of Energy (2016), *ARO Young Investigator Program Award* (2015), Provost Diversity Award (2015), Claude R. Hocott Memorial Lectureship, UT Austin (2015), Best Poster Award, USNCCM, San Diego (2015), *Caterpillar Best Paper Prize*, Springer-Verlag (2014), John W. and Ernest L. Heinrich Scholarship, University of California Davis (2004). American Public Works Associate Scholarship, American Public Works Association (2004).

Selected Invited Seminars and Keynotes: In total, more than 25 travel scholarships to various conferences and over 45 invited talks at Universities (e.g. Brown, Harvard, Stanford, MIT, Duke, CMU, UT Austin, Georgia Tech, RPI, Penn State, UC Davis, TU Dresden), National Laboratories (e.g. Sandia, Los Alamos, Lawrence Livermore, Army Cold Region Research Laboratory) and industries (e.g. Shell, Exxonmobil, Itasca Consulting Group, IBM).

Representative Publications (Underlines indicate PhD students or postdocs, over 50 journal articles, H-index=26)

1. K. Wang, **W.C. Sun**, Meta-modeling game for deriving theory-consistent, microstructure-based traction-separation laws via deep reinforcement learning, *Comput Methods Appl Mech Eng*, 346:216-241, 2019. [[PDF](#)]
2. K. Wang, **W.C. Sun**, A multiscale multi-permeability poroplasticity model linked by recursive homogenizations and deep learning, *Comput Methods Appl Mech Eng*, 334(1):337-380, 2018. [[PDF](#)]
3. S. Na, **W.C. Sun**, Computational thermomechanics of crystalline rock. Part I: a combined multi-phase-field/crystal plasticity approach for single crystal simulations, *Comput Methods Appl Mech Eng*, 338:657-691, 2018. [[PDF](#)]
4. S. Na, **W.C. Sun**, Computational thermo-hydro-mechanics for multiphase freezing and thawing porous media in the finite deformation range, *Comput Methods Appl Mech Eng*, 318:667-700, 2017. [[PDF](#)]
5. **W.C. Sun**, A stabilized finite element formulation for monolithic thermo-hydro-mechanical simulations at finite strain, *Int J Numer Methods Eng*, 103(11):798-839, 2015. [[PDF](#)]

Professional Services: Reviewer: More than 34 journals. Associate Editor: Computer Modeling in Engineering and Science (Shaofan Li as editor-in-chief) Guest Editor & Editorial Board Member: International Journal of Multiscale Computational Engineering, organizers and co-organizers of over 28 mini-symposium at USNCCM, EMI Conference, AGU Fall Meeting and WCCM, **Local committee chair of WCCM New York**, and co-chair of the 1st IACM [MMLDT-CSET](#) conference and ASCE EMI conference at Columbia. Primary or sole PhD advisor of 4 PhD students/postdocs who are now currently on tenure-track ([Northeastern](#), [University of Hong Kong](#), [McMaster](#), [Chinese Academy of Sciences](#)). **Grants and Contracts:** Over 5 million US dollars of research expense (more than 80% from single-PI projects) from DOE, NSF, ARO and, AFOSR, DOD MURI, DOE NNSA; over 20 million US dollars including joint research grants. **Personal Data:** Citizenship: USA.