

Kallol Sett

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ACADEMIC INTERESTS

Primary research interest lies in developing computational tools for performance- and resilience-based design solution of civil infrastructure objects and systems prone to extreme events such as earthquakes, floods, and windstorms, by operating at the confluence of physics-based and data-driven modeling and simulation, information theory, stochastic calculus, optimization theory, and high-performance computing. Most recent and current works - which are funded by NSF, NASA, USDOT, NIST, and the industry - are on:

Uncertainty characterization and quantification: Geotechnical site characterization, structural damage evaluation, hazard characterization

Uncertainty propagation: Probabilistic elasto-plasticity, stochastic finite elements

Risk and reliability analysis: Performance- and resilience-based engineering, life-cycle cost analysis

Teaching interests closely relate to research interests. Broadly they are in theoretical and computational solid mechanics with emphasis on geomechanics and application of probability theory in civil engineering. Specifically, the subject areas are:

Probabilistic methods: Probability and statistics for civil engineers, risk and reliability, stochastic finite element methods

Geomechanics and geotechnical engineering: Soil mechanics, foundation engineering, theoretical geomechanics, computational geomechanics, soil dynamics, geotechnical earthquake engineering

General area of solid mechanics: Statics, mechanics of materials, continuum mechanics, elasticity, plasticity, linear and nonlinear finite element methods in applied mechanics

ACADEMIC BACKGROUND

Formal Education

Doctor of Philosophy in Civil Engineering, University of California, Davis, CA, September 2007; Dissertation title: “Probabilistic Elasto-Plasticity and its Application in Finite Element Simulations of Stochastic Elastic-Plastic Boundary Value Problems”; Advisor: Boris Jeremić

Master of Science in Civil Engineering, University of Houston, Houston, TX, June 2003; Thesis title: “Characterization and Modeling of Structural and Self-Monitoring Behavior of Fiber Reinforced Polymer Concrete”; Advisor: Cumaraswamy Vipulanandan.

Bachelor of Civil Engineering (with Honors), Jadavpur University, Calcutta, India, July 1997; Senior year project title: “Finite Element Analysis of a Cap of a Well Foundation”; Advisor: Kallol K. Ghosh.

Other Professional Courses/Trainings/Workshops

- Seismic Design of California Bridges (8 hours), Internal Training, California Department of Transportation, Sacramento, CA, July 30, 2009
- Rockfall Mitigation Workshop (8 hours), Internal Workshop, California Department of Transportation, Sacramento, CA, June 23, 2009
- Earth Retaining Systems for Designers (8 hours), Internal Training, California Department of Transportation, Sacramento, CA, May 20, 2009
- Log of Test Boring Quality Assessment (8 hours), Internal Workshop, California Department of Transportation, Sacramento, CA, January 28, 2009
- Introduction to Measurement Uncertainty Analysis (3 hours web-based course), Presented by MTS and NEESinc, August 29, 2006
- NEES (Network for Earthquake Engineering Simulation) Hybrid Simulation Workshop, UC Berkeley, Richmond Field Station, CA, December 12-13, 2005
- OpenSees Developer Symposium and Workshop (16 hours), PEER (Pacific Earthquake Engineering Research) Headquarters, Richmond Field Station, CA, August 24-25, 2005
- Geotechnical Site Investigation Using the Cone Penetration Test (8 hours), presented by Dr. Peter K. Robertson, University of Alberta, Canada and David J. Woeller, ConeTec, Inc., Sacramento, California, February 22, 2005
- OpenSees User Workshop 2004, PEER (Pacific Earthquake Engineering Research) Headquarters, Richmond Field Station, CA, September 2-3, 2004
- OpenSees User Workshop 2003, PEER (Pacific Earthquake Engineering Research) Headquarters, Richmond Field Station, CA, August 21-22, 2003
- UNIX, C and C++ (3 weeks), presented by OSDATA (a subsidiary of Orient Longman Limited), Calcutta, India, July, 1999
- Oracle Developer (4 weeks), presented by SQL Star International Limited, Calcutta, India, June, 1999

ACADEMIC APPOINTMENTS

- January 2020–present, Associate Professor, Department of Civil, Structural and Environmental Engineering, University at Buffalo, The State University of New York, Buffalo, NY
- January 2014–December 2019, Assistant Professor, Department of Civil, Structural and Environmental Engineering, University at Buffalo, The State University of New York, Buffalo, NY
- January 2014–August 2014, Adjunct Assistant Professor, Department of Civil Engineering, The University of Akron, Akron, OH
- August 2009–December 2013, Assistant Professor, Department of Civil Engineering, The University of Akron, Akron, OH
- April 2009–June 2009, Lecturer (Part-Time), Department of Civil and Environmental Engineering, University of California, Davis, CA
- August 2008–August 2009, Post-Doctoral Researcher (Part-Time), Department of Civil and Environmental Engineering, University of California, Davis, CA
- April 2008–June 2008, Lecturer (Part-Time), Department of Civil and Environmental Engineering, University of California, Davis, CA

September 2007-August 2008, Post-Doctoral Researcher, Department of Civil and Environmental Engineering, University of California, Davis, CA

July 2003-September 2007. Graduate Student Researcher/Teaching Assistant, Department of Civil and Environmental Engineering, University of California, Davis, CA

August 2001-June 2003. Research/Teaching Assistant, Department of Civil and Environmental Engineering, University of Houston, Houston, TX

INDUSTRY EXPERIENCE

August 2008-August 2009, Transportation Engineer, California Department of Transportation (Caltrans), Sacramento, CA

August 1998-July 2001, Junior Engineer, Afcons Infrastructure Limited, Bombay, India

August 1997-July 1998, Graduate Trainee Engineer, Afcons Infrastructure Limited, Bombay, India

CONSULTING EXPERIENCE

Golder Associates Ltd., Vancouver, BC

Seismic Program for Dikes in the Lower Mainland: Scoping Study, March 2018-June 2018

Second Narrows Water Supply Tunnel Project, January 2016-May 2017

TEACHING EXPERIENCE

At the University at Buffalo, 2014–

CIE 530 Mechanical Behavior of Geo-Materials: Fall 2014; Fall 2015; Fall 2016; Fall 2017; Fall 2018; Fall 2019; Fall 2020; Fall 2021

CIE 512 Risk and Reliability in Geotechnical and Structural Engineering: Spring 2014; Spring 2015; Spring 2016; Spring 2017; Spring 2018; Spring 2019; Spring 2020; Spring 2021

EAS 207 Statics: Fall 2018

EAS 209 Mechanics of Solids: Fall 2019; Fall 2020, Spring 2022

At the University of Akron, 2009-2013

4300 694-809 Risk and Reliability in Geotechnical and Structural Engineering: Fall 2010; Fall 2012

4300 694-809 Computational Geomechanics: Fall 2011

4300 314 Geotechnical Engineering and Geotechnical Engineering Laboratory: Spring 2010; Spring 2011; Spring 2012; Spring 2013

4300 202 Intro to Mechanics of Solids: Spring 2011; Spring 2012; Spring 2013

4300 201 Statics: Fall 2009; Fall 2010; Fall 2011; Fall 2012; Fall 2013

At the University of California, Davis, 2007-2009

ECI 171 Soil Mechanics and Soil Mechanics Laboratory: Spring 2009

ENG 104 Mechanics of Materials: Spring 2008

ENG 35 Statics: Summer 2007

AWARDS AND HONORS

Exceptional Service Award, College of Engineering, The University of Akron, December 2013

UC Davis Prize for Excellence in Geotechnical Engineering, 2006

Travel Fellowship, United States Association for Computational Mechanics, 2005, 2007

Non-Resident Tuition Fellowship (NRTF), Department of Civil and Environmental Engineering, University of California, Davis October 2003-September 2007

Graduate Assistant Tuition Fellowship (GATF), Department of Civil and Environmental Engineering, University of Houston, August 2001-June 2003

RESEARCH GRANTS

Real-Time Decision Support System for Transportation Infrastructure Management under a Hurricane Event, *USDOT* through Region 2 University Transportation Center, February 2021–January 2022, \$143,504, Co-PI, with T. Wu (PI) and A. S. Whittaker

Real-Time Prediction of Storm Surge and Wave Loading on Coastal Bridges, *USDOT* through Region 2 University Transportation Center, January 2020–December 2020, \$175,256, Co-PI, with T. Wu (PI) and A. S. Whittaker

Development of Fragility Models for Line Components and Line Exposures to Extreme Events, *CEATI International Inc.*, December 2019–May 2021, \$96,418, PI, with T. Wu and M. Bruneau

Seismic Rehabilitation of Existing Unreinforced Masonry Buildings, *National Institute for Standards and Technology*, August 2019–July 2023, \$584,000, Co-PI, with A. Stavridis (PI) and M. Bruneau

Performance-Based Engineering of Transportation Infrastructure Considering Multiple Hazards, *USDOT* through Region 2 University Transportation Center, October 2018–January 2020, \$135,043 PI, with T. Wu and A. S. Whittaker

Towards Improving the Sustainability of Urban Infrastructures and Groundwater Usage in Growing Cities, *UB RENEW*, September 2017–August 2018, \$30,182, Co-PI, with E. Chaussard (PI) and Z. Hamstead, internal grant

Performance-Based Evaluation of Self-Centering Concentrically Braced Frames, *National Science Foundation*, September 2012–August 2016, \$297,803, Co-PI, with D. Roke (PI), Q. Huang and A. Chandra

Stochastic Nonlinear Dynamic Simulation for Prediction of Seismic Ground Motion, *National Science Foundation*, July 2012–June 2016, \$222,069, PI

Framework for Stochastic Simulation of 3-D Constitutive Behavior of Granular Materials, *NASA/Ohio Space Grant Consortium*, July 2010–June 2011, \$35,813, PI

STUDENT ADVISING

Current

Alireza Kazemian, PhD student, Department of Civil, Structural and Environmental Engineering, University at Buffalo; PhD dissertation topic: *Resilience of civil infrastructures*

Past

Alexandros Nikellis, PhD 2019, Department of Civil, Structural and Environmental Engineering, University at Buffalo; PhD dissertation title: *Risk-informed Decision Making for Civil Infrastructure Subjected to Single and Multiple Hazards*; current/last known position: Engineer, Berkshire Hathaway Specialty Insurance, San Ramon, CA

Siddharth Shiladitya Parida, PhD 2019, Department of Civil, Structural and Environmental Engineering, University at Buffalo; PhD dissertation title: *Model-Data Fusion for Probabilistic Analysis of Civil Infrastructures*; co-advised with Puneet Singla; current/last known position: Assistant Professor, Embry-Riddle Aeronautical University, Daytona Beach, FL

Fangbo Wang, PhD 2018, Department of Civil, Structural and Environmental Engineering, University at Buffalo; PhD dissertation title: *Stochastic Dynamic Finite Elements for Applications in Earthquake Engineering*; current/last known position: Assistant Professor, Tianjin University, China

Siddharth Shiladitya Parida, MS 2016, Department of Civil, Structural and Environmental Engineering, University at Buffalo; MS thesis title: *Probabilistic Geotechnical Site Characterization through Stochastic Inverse Analysis of Geophysical Test Measurements*; co-advised with Puneet Singla; current/last known position: N/A; continued for PhD

Arezoo Sadrinezhad, PhD 2014, Department of Civil Engineering, The University of Akron; PhD dissertation title: *Multiaxial Probabilistic Elastic-Plastic Constitutive Simulations of Soils*; current/last known position: Assistant Professor, California State University, Fresno, CA

Kow O. Eshun, MS 2013, Department of Civil Engineering, The University of Akron; MS thesis title: *Quantification of the Effects of Soil Uncertainties on Nonlinear Site Response Analysis: Brute Force Monte Carlo Approach*; current/last known position: Staff Geotechnical Engineer, Terracon, Charleston, WV

Cameron Carris, BS 2012, Department of Civil Engineering, The University of Akron; undergraduate honors thesis title: *In-Situ Soil Testing Methods*; current/last known position: Sales Engineer, Ketchum & Walton Co., Richfield, OH

Joshua Nine, BS 2011, Department of Civil Engineering, The University of Akron; undergraduate honors thesis title: *The Effect of Uncertain Spatial Variability of Soils on Differential Settlement of Footings*; current/last known position: Structural Analyst, GPD Group, Canton, OH

PROFESSIONAL SERVICES

National/International Services

Professional Societies

Member, Probabilistic Methods Committee, Engineering Mechanics Institute of ASCE, 2014-

Member, Risk Assessment and Management Committee, Geo-Institute of ASCE, 2009-2018

Conference Activities

Member of the Scientific Committee, 14th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP14), Dublin, Ireland, July 9-13, 2023

Member of the Scientific Committee, 7th International Symposium on Geotechnical Safety and Risk, Taipei, Taiwan, December 11-13, 2019

Member of the Scientific Committee, 13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), Seoul, South Korea, May 26-30, 2019

Session Co-organizer, *Risk Assessment and Management*, Geo-Congress 2019: Eighth International Conference on Case Histories in Geotechnical Engineering, Philadelphia, PA, March 24-27, 2019

Member of the Technical Committee, International Conference on Disaster Risk Mitigation, BUET-Japan Institute of Disaster Prevention and Urban Safety, Dhaka, Bangladesh, September 23-24, 2017

Member of the International Scientific Committee, Geo-Risk 2017: Geotechnical Risk from Theory to Practice, Denver, CO, June 4-7, 2017

Member of the International Scientific Committee, Probabilistic Mechanics & Reliability Conference 2016, Vanderbilt University, Nashville, TN, May 22-25, 2016

Session Co-organizer, *Probabilistic/Stochastic Modeling and Simulation in Nonlinear Mechanics*, 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Vancouver, BC, July 12-15, 2015

Member of the Scientific Committee, 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Vancouver, BC, July 12-15, 2015

Session Co-organizer, *Stochastic/Probabilistic Modeling and Simulations in Computational Mechanics*, III South-East European Conference on Computational Mechanics (SEECCM III), Kos Island, Greece, June 12-14, 2013

Session Co-organizer, *Probabilistic/Simulation Methods*, GeoRisk 2011: Risk Assessment and Management in Geoengineering, Atlanta, GA, June 26-28, 2011

Session Moderator, Minisymposium on *Computational Geomechanics*, 9th United States National Congress on Computational Mechanics (USNCCM9), San Francisco, CA, July 23-26, 2007

Reviewing Activities

Proposals

US Civilian Research and Development Foundation

US National Science Foundation

Journals

Journal of Geotechnical and Geoenvironmental Engineering

Canadian Geotechnical Journal

Géotechnique

Soils and Foundations

Computers and Geotechnics

Engineering Geology

International Journal for Numerical and Analytical Methods in Geomechanics

International Journal of Geomechanics

Soil Dynamics and Earthquake Engineering

Earthquake Engineering & Structural Dynamics

Computer Methods in Applied Mechanics and Engineering

Journal of Engineering Mechanics

Journal of Computing in Civil Engineering

American Concrete Institute (ACI) Materials Journal

Journal of Aerospace Engineering

Conference Proceedings & Special Publications

Geo-Congress 2019: Eighth International Conference on Case Histories in Geotechnical Engineering, 2019

Geo-Risk 2017: Geotechnical Risk from Theory to Practice, a specialty conference of the Geo-Institute of ASCE, 2017

Geotechnical Frontiers 2017, the annual congress of the Geo-Institute of ASCE, 2017

ICOSSAR 2013: 11th International Conference on Structural Safety & Reliability, organized by the International Association for Structural Safety & Reliability, 2013

GeoRisk 2011: Geotechnical Risk Assessment and Management in Geoengineering, a specialty conference of the Geo-Institute of ASCE, 2011

GeoHunan International Conference II: Emerging Technologies for Design, Construction, Rehabilitation, and Inspections of Transportation Infrastructures, 2011

GeoFlorida 2010, the annual congress of the Geo-Institute of ASCE, 2010

IS-Tokyo 2009, the International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, organized by the Japanese Geotechnical Society (JGS) and the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), 2009

IFCEE '09, 2009 International Foundation Congress and Equipment Expo, organized by the International Association of Foundation Drilling (ADSC), the Geo-Institute of ASCE, and Pile Driving Contractors Association (PDCA), 2009

GEESD IV, 4th decennial Geotechnical Earthquake Engineering and Soil Dynamics Conference, organized by the EESD Committee of the Geo-Institute of ASCE, 2008

University Services

Department, College, and University Committees

Senator, Faculty Senate, University at Buffalo, 2021-

Chair, Faculty Search Committee, Department of Engineering Education, University at Buffalo, 2021-2022

Member, Graduate Studies Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo, 2014-2021

Member, Graduate Academic Coordinator Search Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo, 2016

Member, Faculty Search Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo, 2015

Chair, Computer Committee, Department of Civil Engineering, The University of Akron, 2009-2013

Dissertation and Thesis Committees

Ph.D. Committee of Marzieh Shahraki, University at Buffalo, July 2022

Ph.D. Committee of Seyed Omid Sajedi, University at Buffalo, May 2022

Ph.D. Committee of Haifeng Wang, University at Buffalo, August 2021

Ph.D. Committee of Amir Sarreshtehdari, University at Buffalo, May 2021

M.S. Committee of Rupsa Roy, University at Buffalo, August 2020

M.S. Committee of Zarak Khan Kasi, University at Buffalo, July 2019

Ph.D. Committee of Joseph Colletti, University at Buffalo, May 2019

Ph.D. Committee of Justin Coleman, University at Buffalo, April 2019

Ph.D. Committee of Supratik Bose, University at Buffalo, January 2019
Ph.D. Committee of Grigoris Fountas, University at Buffalo, December 2017
M.S. Committee of Umaipalan Sivaratnarajah, University at Buffalo, July 2016
M.S. Committee of Joseph Colletti, University at Buffalo, May 2016
M.S. Committee of Thomas Androutselis, University at Buffalo, December 2015
M.S. Committee of Sourodeep Ghosh, University at Buffalo, March 2015
Ph.D. Committee of Qiqi Huang, University at Buffalo, December 2014
Ph.D. Committee of Zilan Zhong, University at Buffalo, October 2014
M.S. Committee of Andrew Frankhouser, The University of Akron, April 2013
M.S. Committee of M. R. Hasan, The University of Akron, November 2012
M.S. Committee of Umme Amina Mannan, The University of Akron, June 2012
M.S. Committee of Priyanka Sarker, The University of Akron, June 2012
M.S. Committee of Brandon Jeffers, The University of Akron, April 2012
Ph.D. Committee of Pouya Bani Bayat, The University of Akron, December 2011
M.S. Committee of Michael A. Adams, The University of Akron, April 2011
Ph.D. Committee of Arash Erfani Joorabchi, The University of Akron, February 2011
M.S. Committee of Subhashini Neela, The University of Akron, November 2010
M.S. Committee of Ayman W. Ali, The University of Akron, July 2010
M.S. Committee of Godwin Addiah Arthur, The University of Akron, July 2010
M.S. Committee of Songquan Wang, The University of Akron, April 2010
M.S. Committee of Sudeep Adhikari, The University of Akron, November 2009

PUBLICATIONS AND PRESENTATIONS

Journal Articles

23. Singh, R. R., Bruneau, M., Stavridis, A., and Sett, K., “Resilience Deficit Index for Quantification of Resilience”, *Resilient Cities and Structures*, Vol. 1, pp. 1-9, 2022
22. Parida, S. S., Nikellis, A., Sett, K., and Singla, P., “Model-Data Fusion for Seismic Performance Evaluation of an Instrumented Highway Bridge”, *Earthquake Engineering & Structural Dynamics*, Vol. 49, pp. 1559-1578, 2020
21. Nikellis, A. and Sett, K., “Multihazard Risk Assessment and Cost-Benefit Analysis of a Bridge-Roadway-Levee System”, *Journal of Structural Engineering*, Vol. 146, No. 5, pp. 04020050-1-13, 2020
20. Parida, S. S., Sett, K., and Singla, P., “Model-Data Fusion for Spatial and Statistical Characterization of Soil Parameters from Geophysical Measurements”, *Soil Dynamics and Earthquake Engineering*, Vol. 124, pp. 35-57, 2019
19. Nikellis, A., Sett, K., and Whittaker, A. S., “Multihazard Design and Cost-Benefit Analysis of Steel Buildings with Special Moment Resisting Frames”, *Journal of Structural Engineering*, Vol. 145, No. 5, pp. 04019031-1-13, 2019

18. Wang, F. and Sett, K., "Time Domain Stochastic Finite Element Simulation towards Probabilistic Seismic Soil-Structure Interaction Analysis", *Soil Dynamics and Earthquake Engineering*, Vol. 116, pp. 460-475, 2019
17. Nikellis, A., Eshun, K. O., Dyanati, M., Roke, D. A., Huang, Q., Chandra, A., and Sett, K., "Effect of Site-Specific Soil Nonlinearities and Uncertainties on Ground Motion Intensity Measures and Structural Demand Parameters", *Georisk*, Vol. 12, No. 4, pp. 279-296, 2018
16. Chandra, A., Huang, Q., Roke, D. A., and Sett, K., "Improving Precision in Earthquake Loss Estimation", *Sustainable and Resilient Infrastructure*, Vol. 3, No. 3, pp. 128-149, 2018
15. Huang, Q., Dyanati, M., Roke, D. A., and Chandra, A., and Sett, K., "Economic Feasibility Study of Self-Centering Concentrically Braced Frame Systems", *Journal of Structural Engineering*, Vol. 144, No. 8, pp. 04018101-1-15, 2018
14. Parida, S. S., Sett, K., and Singla, P., "An Efficient PDE-Constrained Stochastic Inverse Algorithm for Probabilistic Geotechnical Site Characterization using Geophysical Measurements", *Soil Dynamics and Earthquake Engineering*, Vol. 109, pp. 132-149, 2018
13. Sadrinezhad, A., Sett, K., and Hariharan, S. I., "Efficient Solution Algorithms for Multiaxial Probabilistic Elasto-Plastic Constitutive Simulations", *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. 41, No. 18, pp. 1807-1827, 2017
12. Wang, F. and Sett, K., "Time-Domain Stochastic Finite Element Simulation of Uncertain Seismic Wave Propagation through Uncertain Heterogeneous Solids", *Soil Dynamics and Earthquake Engineering*, Vol. 88, pp. 369-385, 2016
11. Karapiperis, K., Sett, K., Kavvas, M. L., and Jeremić, B., "Fokker-Planck Linearization for Non-Gaussian Stochastic Elastic-Plastic Finite Elements", *Computer Methods in Applied Mechanics and Engineering*, Vol. 301, pp. 451-469, 2016
10. Ali, A. W., Abbas, A. R., Nazzal, M. and Sett, K., "Incorporation of Subgrade Modulus Spatial Variability in Performance Prediction of Flexible Pavements", *International Journal of Pavement Research and Technology*, Vol. 6, No. 2, pp. 136-140, 2013
9. Gandomi, A. H., Roke, D. A., and Sett, K., "Genetic Programming for Moment Capacity Modeling of Ferrocement Members", *Engineering Structures*, Vol. 57, pp. 169-176, 2013
8. Sett, K., Unutmaz, B., Çetin, K. Ö., Koprivica, S., and Jeremić, B., "Soil Uncertainty and Its Influence on Simulated G/G_{max} and Damping Behavior", *Journal of Geotechnical and Geoenvironmental Engineering*, Vol. 137, No. 3, pp. 218-226, 2011
7. Sett, K., Jeremić, B., and Kavvas, M. L., "Stochastic Elastic-Plastic Finite Elements", *Computer Methods in Applied Mechanics and Engineering*, Vol. 200, Nos. 9-12, pp. 997-1007, 2011
6. Sett, K. and Jeremić, B., "Probabilistic Yielding and Cyclic Behavior of Geomaterials", *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. 34, No. 15, pp. 1541-1559, 2010
5. Jeremić, B. and Sett, K., "On Probabilistic Yielding of Materials", *Communications in Numerical Methods in Engineering*, Vol. 25, No. 3, pp. 291-300, 2009
4. Sett, K., Jeremić, B., and Kavvas, M. L., "The Role of Nonlinear Hardening/Softening in Probabilistic Elasto-Plasticity", *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. 31, No. 7, pp. 953-975, 2007
3. Sett, K., Jeremić, B., and Kavvas, M. L., "Probabilistic Elasto-Plasticity: Solution and Verification in 1D", *Acta Geotechnica*, Vol. 2, No. 3, pp. 211-220, 2007
2. Jeremić, B., Sett, K., and Kavvas, M. L., "Probabilistic Elasto-Plasticity: Formulation in 1D", *Acta Geotechnica*, Vol. 2, No. 3, pp. 197-210, 2007
1. Sett, K. and Vipulanandan, C., "Properties of Polyester Polymer Concrete with Glass and Carbon Fibers", *ACI Materials Journal*, Vol. 101, No. 1, pp. 30-41, 2004

Conference Papers

19. Nikellis, A., Sett, K., Wu, T., and Whittaker, A. S., “Multi-Hazard Financial Risk Assessment of a Bridge-Roadway-Levee System”, *Risk-Based Bridge Engineering* (Proceedings of the 10th New York City Bridge Conference, New York Hilton Midtown, August 26-27), Khaled Mahmoud, ed., pp. 299-307, CRC Press, 2019
18. Bose, S., Stavridis, A., Anastasopoulos, P. C., and Sett, K., “Surrogate Statistical Model of a School Building in Nepal Using ASCE 41-17”, *Proceedings of the 2nd International Conference on Natural Hazards & Infrastructure*, Chania, Greece, June 23-26, 2019
17. Nikellis, A. and Sett, K., “Risk Assessment of a Bridge-Roadway-Levee System Subjected to Multiple Hazards”, *Proceedings of the 2nd International Conference on Natural Hazards & Infrastructure*, Chania, Greece, June 23-26, 2019
16. Colletti, J., Tessari, A., Sett, K., Hoffman, W., and Coleman, J. “Shear Wave Velocity Measurement in a Large Geotechnical Laminar Box Using Bender Elements”, *Physical Modelling in Geotechnics: Proceedings of the 9th International Conference on Physical Modelling in Geotechnics (ICPMG 2018)*, London, United Kingdom, July 17-20, Andrew McNamara, Sam Divall, Richard Goodey, Neil Taylor, Sarah Stallebrass, and Jignasha Panchal, Eds., Volume 1, pp. 299-304, CRC Press, 2018
15. Nikellis, A., Sett, K., and Whittaker, A. S., “Multi-Hazard Life Cycle Cost Analysis of Steel Buildings with Special Moment Resisting Frames”, *Proceedings of the Eleventh U.S. National Conference on Earthquake Engineering (11NCEE)*, Los Angeles, CA, June 25-29, EERI, 2018
14. Parida, S. S., Sett, K., and Singla, P., “Probabilistic Geotechnical Site Characterization from Geophysical Measurements using Model-Data Fusion”, *Geotechnical Special Publication No. 293: Geotechnical Earthquake Engineering and Soil Dynamics V – Slope Stability and Landslides, Laboratory Testing, and In Situ Testing* (Proceedings of Geotechnical Earthquake Engineering and Soil Dynamics V, Austin, TX, June 10-13), Scott J. Brandenberg and Majid T. Manzari, Eds., pp. 489-498, ASCE, 2018
13. Parida, S. S., Sett, K., and Singla, P., “Towards Optimal Information Gain for Judicious Positioning of Sensors in Geophysical Tests”, *Geotechnical Special Publication No. 284: Geo-Risk 2017 – Impact of Spatial Variability, Probabilistic Site Characterization, and Geohazards* (Proceedings of Geo-Risk 2017: Geotechnical Risk from Theory to Practice, Denver, CO, June 4-7), Jinsong Huang, Gordon A. Fenton, Limin Zhang, and D. V. Griffiths, Eds., pp. 497-506, ASCE, 2017
12. Parida, S. S., Sett, K., and Singla, P., “Stochastic Waveform Inversion for Probabilistic Geotechnical Site Characterization”, *Geotechnical and Geophysical Site Characterisation 5: Proceedings of the Fifth International Conference on Geotechnical and Geophysical Site Characterization (ISSMGE TC-102 - ISC’5)*, Gold Coast, Queensland, Australia, September 5-9, B. M. Lehane, H. E. Acosta-Martinez and R. Kelly, Eds., Volume 1, pp. 1459-1464, Australian Geomechanics Society, 2016
11. Sadrinezhad, A. and Sett, K., “Multiaxial Probabilistic Elastic-Plastic Constitutive Simulations of Soils”, *Safety, Reliability, Risk and Life-Cycle Performance of Structures and Infrastructures* (Proceedings of ICOSSAR 2013: International Conference on Structural Safety & Reliability, New York, NY, June 16-20), George Deodatis, Bruce R. Ellingwood and Dan M. Frangopol, eds., pp. 859-866, CRC Press, 2013
10. Roke, D. A., Chandra, A., Hunag, Q., and Sett, K., “Methodology for Life Cycle Cost Assessment of Self-Centering Concentrically Braced Frame Systems”, *Proceedings of the 10th International Conference on Urban Earthquake Engineering*, Tokyo Institute of Technology, Tokyo, Japan, March 1-2, 2013
9. Sett, K., Eshun, K. O., Chao, Y.-C., and Jeremić, B., “Effect of Uncertain Spatial Variability of Soils on Nonlinear Seismic Site Response Analysis”, *Geotechnical Special Publication No. 225: State of the Art and Practice in Geotechnical Engineering* (Proceedings of Geo-Congress 2012, Oakland, CA, March 25-29), Roman D. Hryciw, Adda Athanasopoulos-Zekkos, and Nazli Yesiller, Eds., pp. 2856-2865, ASCE, 2012
8. Ali, A. W., Abbas, A. R., and Sett, K., “Effect of Spatial Variations in Subgrade Stiffness on Pavement Performance”, *Geotechnical Special Publication No. 211* (Proceedings of Geo-Frontiers 2011: Advances in Geotechnical Engineering, Dallas, TX, March 13-16), Jie Han and Daniel A. Alzamora, Eds., pp. 4802-4811, ASCE, 2011

7. Jeremić, B., Tafazzoli, N., Kamrani, B., Chao, Y.-C., Jeong, C.-G., Tasiopoulou, P., Sett, K., Kammerer, A., Orbović, N., and Blahoianu, A., “On Seismic Soil Structure Interaction Simulations for Nuclear Power Plants”, *Proceedings of the OECD–NEA–IAGE–ISSC Workshop on Soil Structure Interaction Knowledge and Effect on the Seismic Assessment of NPPs Structures and Components*, Ottawa, Canada, October 6-8, 2010
6. Sett, K. and Jeremić, B., “Forward and Backward Probabilistic Simulations in Geotechnical Engineering”, *Geotechnical Special Publication No. 186: Contemporary Topics in In-Situ Testing, Analysis, and Reliability of Foundations* (Proceedings of the 2009 International Foundation Congress and Equipment Expo (IFCEE '09), Orlando, FL, March 15-19), Magued Iskander, Debra F. Laefer, and Mohamad H. Hussein, Eds., pp. 332-339, ASCE, 2009
5. Jeremić, B. and Sett, K., “Uncertain Soil Properties and Elastic-Plastic Simulations in Geomechanics”, *Geotechnical Special Publication No. 170: Probabilistic Applications in Geotechnical Engineering* (Proceedings of Geo-Denver 2007: New Peaks in Geotechnics, Denver, CO, Feb. 18-21), K. K. Phoon, G. A. Fenton, E. F. Glynn, C. H. Juang, D. V. Griffiths, T. F. Wolff, and L. Zhang, Eds., pp. 1-11, ASCE, 2007
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3. Jeremić, B. and Sett, K., “The Influence of Uncertain Material Parameters on Stress-Strain Response”, *Geotechnical Special Publication No. 156: Geomechanics II – Testing, Modeling and Simulation* (Proceedings of the second Japan-US Workshop on Testing, Modeling and Simulation in Geomechanics, Kyoto, Japan, September 8-10), Poul V. Lade and Teruo Nakai, Eds., pp. 132-147, ASCE, 2005
2. Jeremić, B., Putnam, J., Sett, K., Humphrey, D., and Patenaude, S., “Calibration of Elastic-Plastic Material Model for Tire Shreds”, *Geotechnical Special Publication No. 126: Geotechnical Engineering for Transportation Projects* (Proceedings of Geo-Trans 2004, Los Angeles, CA, July 27-31), Mishac K. Yegian and Edward Kavazanjian, Eds., pp. 760-767, ASCE, 2004
1. Vipulanandan, C. and Sett, K., “Development and Characterization of Piezoresistive Smart Structural Materials”, *Engineering, Construction, and Operations in Challenging Environments: Earth & Space 2004* (Proceedings of the Ninth Biennial ASCE Aerospace Division International Conference on Engineering, Construction, and Operations in Challenging Environments, League City/Houston, TX, March 7-10), Ramesh B. Malla and Arup Maji, Eds., pp. 656-663, ASCE, 2004

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7. Kazemian, A., Angelopoulos, K., Sett, K., Bruneau, M., and Wu, T. (Department of Civil, Structural and Environmental Engineering, University at Buffalo, The State University of New York), “Development of Vulnerability Assessment for Line Components and Line Exposures to Extreme Events”, Final Report, Montreal (QC): CEATI International Inc., June 2021, 219 p., Report No.: XXXX, Contract No.: T193700-33128
6. Li, S., Wu, T., and Sett, K. (University at Buffalo, The State University of New York), “Real-Time Prediction of Storm Surge and Wave Loading on Coastal Bridges”, Final Report, Piscataway (NJ): Center for Advanced Infrastructure and Transportation, Rutgers, The State University of New Jersey, February 2021, 15 p., Report No.: CAIT-UTC-XXXXX, Contract No.: 69A3551847102
5. Nikellis, A., Sett, K., Wu, T., and Whittaker, A. S. (Institute of Bridge Engineering, University at Buffalo, The State University of New York), “Performance-Based Engineering of Transportation Infrastructure Considering Multiple Hazards”, Final Report, Piscataway (NJ): Center for Advanced Infrastructure and Transportation, Rutgers, The State University of New Jersey, January 2020, 57 p., Report No.: CAIT-UTC-REG14, Contract No.: 69A3551847102
4. Sett, K., “Probabilistic Elasto–Plasticity and its Application in Finite Element Simulations of Stochastic Elastic-Plastic Boundary Value Problems”, PhD dissertation, University of California, Davis, CA, 2007

3. Jeremić, B., Cheng, Z., Preisig, M., Sett, K., and Sun, W. C. (Department of Civil and Environmental Engineering, University of California, Davis), “Geomechanics Simulations Tools for PBEE”, Year 8 Progress Report, Berkeley (CA): Pacific Earthquake Engineering Research Center, University of California, 2005, 5 p., Contract No.: 4262004
2. Jeremić, B., Putnam, J., Yang, Z., Sett, K., Cheng, Z., Liao, J., Jie, G., and Sun, W. C., “Earthquake Response of Bridge Abutment Backfills Constructed with Tire Shreds”, Final Report, Davis (CA): Department of Civil and Environmental Engineering, University of California, 2004, Contract No.: IWM-C0141/02-00296V, supported by the Special Waste Division of the California Integrated Waster Management Board
1. Sett, K., “Characterization and Modeling of Structural and Self-Monitoring Behavior of Fiber Reinforced Polymer Concrete”, M.S. thesis, University of Houston, Houston, TX, 2003

Invited Presentations

8. “Spatial and Statistical Characterization of P- and S-wave Velocities of Soils from Geophysical Measurements”, PEER International Pacific Rim Forum on Regional-Scale Simulations of Earthquake Ground Motions and Infrastructure Response for Performance-Based Earthquake Engineering, virtual event, June 16-17, 2021
7. “Geotechnical Simulations under Uncertainty”, Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, April 26, 2013
6. “Geotechnical Simulations under Uncertainty”, Department of Civil, Structural and Environmental Engineering, University at Buffalo, Buffalo, NY, March 29, 2013
5. “Geotechnical Simulations under Uncertainty”, Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute, Troy, NY, March 25, 2013
4. “Geotechnical Simulations under Uncertainty”, Department of Civil and Environmental Engineering, University of California, Irvine, CA, January 28, 2011
3. “Stochastic Simulations in Geomechanics”, Department of Civil Engineering, University of Akron, Akron, OH, March 11, 2009
2. “Stochastic Simulations in Geomechanics”, Construction, Geotechnical, and Structural Engineering Seminar Series, Texas A&M University, College Station, TX, February 29, 2008
1. “Modeling and Simulation of Stochastic Elastic-Plastic Material”, Geosystems Engineering Seminar Series, Georgia Institute of Technology, Atlanta, GA, April 12, 2006

Other Presentations

23. “Performance-Based Engineering of Transportation Infrastructure Considering Multiple Hazards”, USDOT Region 2 University Transportation Center (UTC) Consortium Partners Meeting, Rutgers University, NJ, May 31, 2019
22. “Uncertainty Quantification in Earthquake Engineering through Stochastic Inverse and Forward Simulations”, Civil Engineering Seminar Series, University at Buffalo, Buffalo, NY, November 17, 2017
21. “Stochastic Waveform Inversion for Probabilistic Geotechnical Site Characterization”, Golder Associates Ltd., Vancouver, BC, November 18, 2016
20. “Stochastic Waveform Inversion for Probabilistic Geotechnical Site Characterization”, 5th International Conference on Geotechnical and Geophysical Site Characterisation, Jupiters Gold Coast, Queensland, Australia, September 5-9, 2016
19. “Stochastic Finite Element Simulation of Uncertain Seismic Wave Propagation through Uncertain Elastic-Plastic Soils”, WCCM XII & APCOM VI, Seoul, Korea, July 24-29, 2016

18. “Uncertain Seismic Wave Propagation through Uncertain Soils”, Idaho National Lab, Idaho Falls, ID, June 6, 2016
17. “Semi-Analytical Solution of Fokker-Planck-Kolmogorov Equation in Probabilistic Elasto-Plasticity”, EMI 2014 (Annual Conference of the Engineering Mechanics Institute of ASCE), McMaster University, Hamilton, ON, Canada, August 5-8, 2014
16. “Effect of Uncertain Spatial Variability of Soils on Nonlinear Seismic Site Response”, Geo-Congress 2012: State of the Art and Practice in Geotechnical Engineering, Oakland, CA, March 25-29, 2012
15. “Probabilistic Elasto-Plasticity and Hardening–Softening Response”, 11th U.S. National Congress on Computational Mechanics, Minneapolis, MN, July 25-28, 2011
14. “Forward and Inverse Stochastic Simulations in Geomechanics”, 2009 International Foundation Congress and Equipment Expo (IFCEE '09), Orlando, FL, March 15-19, 2009
13. “Probabilistic Elasto–Plasticity and its Application in Finite Element Simulations of Stochastic Elastic-Plastic Boundary Value Problems”, PhD Exit Seminar, University of California, Davis, CA, October 11, 2007
12. “Computational Framework for Simulations of Stochastic Geomaterials”, 9th U.S. National Congress on Computational Mechanics, San Francisco, CA, July 23-26, 2007
11. “Uncertain Soil Properties and Elastic-Plastic Simulations in Geomechanics”, Geo-Denver 2007: New Peaks in Geotechnics (Annual Congress of the Geo-Institute of ASCE), Denver, CO, February 18-21, 2007
10. “Stochastic Elastic-Plastic Modeling in Geomechanics”, 7th World Congress on Computational Mechanics, Los Angeles, CA, July 16-22, 2006
9. “Stochastic Elastic-Plastic Material Modeling”, 15th U.S. National Congress on Theoretical and Applied Mechanics, University of Colorado, Boulder, CO, June 25-30, 2006
8. “Seismic Wave Propagation in Stochastic Soil”, EERI’s 8th U.S. National Conference on Earthquake Engineering (100th Anniversary Earthquake Conference), San Francisco, CA, April 18-22, 2006, poster
7. “Probabilistic Elasto-Plastic Constitutive Integrator”, 8th U.S. National Congress on Computational Mechanics, Austin, TX, July 25-27, 2005
6. “Probabilistic Elasto-Plasticity”, 2005 Joint ASCE/ASME/SES Conference on Mechanics and Materials (McMat 2005), Baton Rouge, LA, June 1-3, 2005
5. “Probabilistic Elastic-Plastic Behavior of Geomaterials”, 2005 PEER (Pacific Earthquake Engineering Research) Annual Meeting, Walnut Creek, CA, April 29-30, 2005, poster
4. “Tire Shred as Bridge Abutment Backfill: Seismic Evaluation”, Geo-Institute Conference on Geotechnical Engineering for Transportation Projects (Geo-Trans 2004), Los Angeles, CA, July 27-31, 2004, poster
3. “Characterization and Modeling of Structural and Self-Monitoring Behavior of Fiber Reinforced Polymer Concrete”, Master’s Thesis Defense, University of Houston, Houston, TX, May 12, 2003
2. “Non-Destructive Compressive Modulus of Fiber Reinforced Polymer Concrete”, 2003 Annual CIGMAT (Center for Innovative Grouting Materials and Technology) Conference, University of Houston, Houston, TX, March 14, 2003, poster
1. “Compressive and Tensile Properties of Fiber Reinforced Polymer Concrete”, 2002 Annual CIGMAT (Center for Innovative Grouting Materials and Technology) Conference, University of Houston, Houston, TX, March 8, 2002, poster