

CURRICULUM VITAE

Elaina J. Sutley

Assistant Professor

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Biographical Summary

Elaina Jennings Sutley is an Assistant Professor in structural engineering at the University of Kansas. Dr. Sutley is a researcher for the NIST-funded Center for Risk-Based Community Resilience Planning, where she specifically is a member of the buildings, social science, and field investigation teams. Dr. Sutley is also a member of the Center for Disaster and Risk Analysis (CDRA). Her research has focused on developing a decision framework for resiliency, vulnerable population studies, performance-based seismic design, large scale testing, nonlinear dynamic analysis, numerical modeling of shape memory alloy devices in various brace configurations, and infrastructure rehabilitation using composite materials.

Elaina Jennings Sutley received the CERRA Student Recognition Award in July 2015 at the ICASP 12 conference for her dissertation research. Dr. Sutley was a key researcher in the NEES-Soft experimental program conducted at the NEES facility at the University at Buffalo in which various retrofit techniques were investigated on a full-scale three-story soft-story building over a time span of 6 months via hybrid testing. Her responsibilities in the NEES-Soft@Buffalo tests included structural design, seismic retrofit design, numerical modeling, nonlinear dynamic analysis, instrumentation planning, installation, and maintenance, test program management, physical damage assessment and repair. Through this test program she developed a good understanding of the procedures and protocol for hybrid testing. She has experience with developing innovative research topics and proposal writing, and in 2011 was awarded a National Science Foundation Graduate Research Diversity Supplement Doctoral Fellowship for her Ph.D. research proposal. She served as the lecturer for the undergraduate Structural Analysis course at Colorado State University in the spring 2015 semester, where she received well-above average reviews. She has also taught one undergraduate supplemental laboratory course (*Civil and Construction Engineering Materials*) as a GTA, receiving high student ratings leading to the award of "Outstanding Graduate Teaching Assistant." At the University of Kansas, Dr. Sutley plans on teaching, developing, and collaborating on undergraduate and graduate courses in structural engineering including: community resiliency, structural analysis, performance-based earthquake engineering, design of woodframe structures, decision support and expert systems, optimization techniques, composite materials, natural hazards and mitigation, and the culture of disaster.

Personal Information

Marital Status: Married

Children: None

Citizenship: U.S.A.

Birthplace: Meridian, MS

Current Position: Assistant Professor at University of Kansas

Educational Preparation

Ph.D., Civil Engineering, Colorado State University, May, 2015.
M.S., Civil Engineering, University of Alabama, December, 2011.
B.S., Civil Engineering, University of Alabama, May, 2010.

Research Fields of Interest

- Community Resiliency
- Performance-based seismic design
- Social vulnerability
- Hazard mitigation and structural reliability
- Optimization techniques and decision-making systems design
- Large scale dynamic testing and monitoring
- Advanced materials
- Infrastructure rehabilitation using composite materials
- Shape memory alloys
- Light-frame wood systems

Appointments

- Assistant Professor, University of Kansas (August 2015 – Present)
- Post-Doctoral Researcher, Center for Risk-Based Community Resilience Planning (May 2015 – July 2015)
- Lecturer, Colorado State University (January 2015 – May 2015)
- Graduate Research Assistant, Colorado State University (August 2012 – May 2015)
- Graduate Research Assistant, University of Alabama (December 2012 – July 2012, transferred to Colorado State University with advisor)
- Graduate Teaching Assistant, University of Alabama (August 2010 – July 2011)

Honors and Awards

- 2015 Civil Engineering Risk and Reliability Association Student Recognition Award
- 2011 Engineering Council of Birmingham Civil Engineering Graduate Student Engineering of the Year
- 2011 National Science Foundation Graduate Research Diversity Supplement Doctoral Fellow
- 2011 University of Alabama National Alumni Association Graduate Fellow
- 2010-2011 Bibb Graves award for Outstanding Graduate Teaching Assistant
- 2010 Nell Vice Support Fund Scholarship

Teaching Experience

CIVE 367 *Structural Analysis*, Colorado State University

Lecturer on the fundamentals of structural analysis, Spring 2015 semester

CIVE 568 *Design of Masonry and Wood Structures*, Colorado State University

Guest lectures on advanced masonry and wood design (4)

CE 262 *Civil and Construction Engineering Materials*, University of Alabama
Lectured and executed laboratory experiments in 1 credit hour supplemental laboratory, 7 sections in total, awarded “Outstanding Graduate Teaching Assistant” per student vote, Fall 2010 - Summer 2011

Professional Activities/Memberships

- Registered Engineer-In-Training, Alabama
- Associate Member, American Society of Civil Engineers (ASCE)
- Member, Center for Disaster and Risk Analysis (CDRA) at Colorado State University
- Society of Women Engineers (SWE)
- Chi Epsilon Honor Society
- Order of the Engineer
- National Society of Collegiate Scholars (NSCS)

Journal Publications

1. **Sutley, E.J.** and J.W. van de Lindt, (2015). “Evolution of Seismic Risk for Woodframe Buildings.” *In Preparation*, July 2015.
2. **Sutley, E. J.**, J.W. van de Lindt, and L. Peek, (2015). “Community-Level Framework for Seismic Resiliency II: Multi-Objective Optimization and Illustrative Examples.” *Submitted to Natural Hazards Review*, July 2015.
3. **Sutley, E.J.**, J.W. van de Lindt, and L. Peek, (2015). “Community-Level Framework for Seismic Resiliency I: Coupling Socioeconomic Characteristics and Engineering Building Systems.” *Submitted to Natural Hazards Review*, July 2015.
4. **Jennings, E.**, Ziaei, W. Pang, J.W. van de Lindt, X. Shao, P. Bahmani, (2015). “Full-Scale Experimental Investigation of Second-Story Collapse Behavior in an Over-Retrofitted First Story of a Woodframe Building.” *Journal of Performance of Constructed Facilities*, DOI 10.1061/(ASCE)CF.1943-5509.0000736.
5. **Jennings, E.**, J.W. van de Lindt, E. Ziaei, P. Bahmani, S. Park, X. Shao, W. Pang, D. Rammer, G. Mochizuki, and M. Gershfeld, (2015). “Full-Scale Experimental Verification of Soft-Story-Only Retrofits of Woodframe Buildings with Hybrid Testing.” *Journal of Earthquake Engineering*, 19(3), pps. 410-430.
6. **Jennings, E.**, J.W. van de Lindt, E. Ziaei, G. Mochizuki, W. Pang, and X. Shao, (2014). “Retrofit of a Soft-Story Woodframe Building using SMA Devices with Full-Scale Hybrid Test Verification.” *Engineering Structures*, 80, pps. 469-485.
7. **Jennings, E.** and J.W. van de Lindt, (2013). “Numerical Retrofit Study of Light-Frame Wood Buildings Using Shape Memory Alloy Devices as Seismic Response Modification Devices.” *Journal of Structural Engineering*, 140(7), pps. 469-485.

Conference Proceedings

1. **Jennings, E.N.**, J.W. van de Lindt, and L. Peek (2015). “Multi-Objective Community-Level Seismic Retrofit Optimization for Resiliency using Engineering and Socioeconomic Variables.” *12th International Conference on Applications of Statistics and Probability in Civil Engineering*, Vancouver, Canada, July 12-15, 2015.
2. **Jennings, E.N.**, J.W. van de Lindt, and L. Peek (2014). “Multi-Objective Optimization Approach for Decision-Making Based on Community Level Resiliency Considering Engineering and Social Variables.” *Third International Conference on Urban Disaster Reduction*, Boulder, Colorado, 2014.
3. **Jennings, E.N.**, J.W. van de Lindt, X. Shao, W. Pang, and E. Ziaei, (2014). “Full-Scale Hybrid Testing of a Soft-Story Woodframe Building Seismically Retrofitted Using Shape Memory Alloy Devices in Scissor-Jack Braces.” *Tenth U.S. National Conference on Earthquake Engineering. Frontiers of Earthquake Engineering*, July 21-25, 2014, Anchorage, Alaska.
4. van de Lindt, J.W., P. Bahmani, **E.N. Jennings**, W. Pang, E. Ziaei, G. Mochizuki, M. Gershfeld, S. Pryor, X. Shao, M. Symans, J. Tian, D. Rammer, (2014). Full-Scale Testing of Soft-Story Woodframe Buildings with Stiffness-Based Retrofits. *Tenth U.S. National Conference on Earthquake Engineering. Frontiers of Earthquake Engineering*, July 21-25, 2014, Anchorage, Alaska.
5. Pang, W., E. Ziaei, X. Shao, **E. Jennings**, J. van de Lindt, M. Gershfeld, and M. Symans, (2014). “A Three-Dimensional Model for Slow Hybrid Testing of Retrofitted Soft-Story WoodFrame Buildings.” *Tenth U.S. National Conference on Earthquake Engineering. Frontiers of Earthquake Engineering*, July 21-25, 2014, Anchorage, Alaska.
6. van de Lindt, J.W., P. Bahmani, M. Gershfeld, G. Mochizuki, X. Shao, S.E. Pryor, W. Pang, M.D. Symans, J. Tian, E. Ziaei, **E.N. Jennings**, D. Rammer, (2014). Seismic Risk Reduction for Soft-Story Wood-Frame Buildings: “Test Results and Retrofit Recommendations from The NEES-Soft Project.” *World Conference on Timber Engineering*, Quebec City, Canada, August 10-14, 2014.
7. Gershfeld, M., C. Chadwell, **E. Jennings**, E. Ziaei, W. Pang, X. Shao, J. van de Lindt, (2014). “Seismic Performance of Distributed Knee-Brace (DKB) System as a Retrofit for Weak-Story Wood-Frame Buildings.” *World Conference on Timber Engineering*, Quebec City, Canada, August 10-14, 2014.
8. Pang, W., E. Ziaei, **E. Jennings**, X. Shao, J. van de Lindt, M. Gershfeld, and S. Pryor, (2014). “Numerical Model for Hybrid Simulation of a Three-Story Wood-Frame Building.” *World Conference on Timber Engineering*, Quebec City, Canada, August 10-14, 2014.
9. van de Lindt, J.W., P. Bahmani, S. Pryor, G. Mochizuki, M. Gershfeld, W. Pang, E. Ziaei, **E. Jennings**, M. Symans, X. Shao, J. Tian, and D. Rammer, (2014). “Overview of the NEES-Soft Experimental Program for Seismic Risk Reduction of Soft-Story Woodframe Buildings.” *Structures Congress 2014*: pp. 2875-2885.
10. Gershfeld, M., C. Chadwell, J. van de Lindt, W. Pang, E. Ziaei, M. Amini, S. Gordon, **E. Jennings**, (2014). “Distributed Knee-Braced (DKB) System as a Complete or Supplemental Retrofit of Soft-Story Wood-frame Buildings.” *Structures Congress 2014*: pp. 2853-2874.

11. van de Lindt, J.W., P. Bahmani, M. Gershfeld, G. Mochizuki, X. Shao, W. Pang, M. Symans, E. Ziaei, **E. Jennings**, S. Pryor, D. Rammer, J. Tian, (2013). "Full-Scale Dynamic Testing of Soft-Story Retrofitted and Un-Retrofitted Woodframe Buildings." *Structural Engineers Association of Southern California*, San Diego, CA.
12. **Jennings, E.**, and J.W. van de Lindt, (2013). "Low Cost Shape Memory Alloy Devices for Seismic Response Modification of Light-Frame Wood Buildings." *Structures Congress 2013*: pp. 1205-1216. doi: 10.1061/9780784412848.107
13. **Jennings, E.N.**, and J.W. van de Lindt, (2012). "Shape Memory Alloy Dampers for Response Modification of Light-Frame Wood Buildings." *15th World Conference on Earthquake Engineering*, Lisboa, 2012.
14. **Jennings, E.**, J. Wang, K. Fridley, and C. Chen, (2013). "Temperature Effect on Subcritical Crack Growth in CFRP Externally Bonded Concrete Systems." *ASC 28th annual technical conference*, Sept 9th – 11th, 2013, State College, PA, CD-ROM proceeding (15 pages).

Upcoming Meetings and Conferences

1. **Jennings, E.N.** and J.W. van de Lindt (2015). "Evolution of Seismic Risk of Low-Rise Woodframe Buildings." *Geotechnical and Structural Engineering Congress 2016*, Phoenix, Arizona.

Other Publications

1. Pang, W., X. Shao, J. van de Lindt, E. Ziaei, **E. Jennings**, (2014). "Hybrid Testing of a Soft-Story Light-frame Wood Building with Seismic Retrofits." *Wood Design Focus: A Journal of Contemporary Wood Engineering*, To Appear.
2. **Jennings, E.**, E. Ziaei, J. van de Lindt, W. Pang, X. Shao, G. Mochizuki, M. Gershfeld, D. Rammer, J. Tian, M. Symans (2014). "Hybrid Testing of a Full-Scale Three-Story Soft-Story Woodframe Building", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3JS9H85N

Research Experience

1. Researcher, "Center for Risk-Based Community Resilience Planning," April 2015 – Present.
2. Research Assistant, "NEES-Soft: Seismic Risk Reduction of Soft-Story Woodframe Buildings," National Science Foundation, 2013 – 2014.
3. Co-Investigator, "Seismic Risk Reduction through use of Advanced Materials," National Science Foundation, 2011-2012.
4. Research Assistant, "Characterization of Environment-Assisted Subcritical Debonding of Bonded Repairs/Strengthening of Aging Infrastructure", National Science Foundation, 2010-2011.