

KEVIN R. MACKIE, Ph.D., P.E.

Department of Civil, Environmental, and Construction Engineering
University of Central Florida, Orlando, FL 32816-2450
Tel: (407) 823-2857, Fax: (407) 823-3315, Email: Kevin.Mackie@ucf.edu

BIOGRAPHICAL DATA

EDUCATION

M.S., Ph.D. UNIVERSITY OF CALIFORNIA AT BERKELEY
Master of Science in Structural Engineering 12/2000
Doctor of Philosophy in Structural Engineering 10/2004
B. Eng. THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART
Bachelor of Engineering in Civil Engineering Suma Cum Laude 12/1998

PROFESSIONAL POSITIONS

8/2012 – present UNIVERSITY OF CENTRAL FLORIDA
Associate professor, Structural Engineering
Department of Civil, Environmental, and Construction Engineering
8/2012 – 5/2013 EIDGENÖSSISCHE TECHNISCHE HOCHSCHULE (ETH) ZÜRICH
Visiting professor, Institute of Structural Engineering
Department of Civil, Environmental, and Geomatic Engineering
8/2006 – 7/2012 UNIVERSITY OF CENTRAL FLORIDA
Assistant professor, Structural Engineering
Department of Civil, Environmental, and Construction Engineering
11/2004 – 7/2006 UNIVERSITY OF CALIFORNIA BERKELEY
Post-doctoral research fellow, Structural Engineering Mechanics & Materials
Department of Civil and Environmental Engineering
6/2000 – 10/2004 UNIVERSITY OF CALIFORNIA BERKELEY
Graduate student researcher, Structural Engineering Mechanics & Materials
Department of Civil and Environmental Engineering
6/2003 – 8/2003 TOKYO INSTITUTE OF TECHNOLOGY, JAPAN
Visiting research fellow, Earthquake Engineering & Structural Dynamics
Department of Civil Engineering
8/1999 – 5/2000 UNIVERSITY OF CALIFORNIA BERKELEY
Graduate student instructor, Structural Engineering Mechanics & Materials
Department of Civil and Environmental Engineering
11/1998 – 8/1999 ANTONUCCI & ASSOCIATES ARCHITECTS & ENGINEERS LLP
Structural project engineer
Pleasantville, NY office
6/1998 – 8/1998 TECHNISCHE UNIVERSITÄT MÜNCHEN, GERMANY
Visiting research fellow, Lehrstuhl Für Massivbau
Institute of Building Materials and Structures
6/1997 – 8/1997 UNIVERSITY OF PRETORIA, SOUTH AFRICA
Visiting research fellow, LGI Laboratory for Structural Mechanics & Dynamics
Department of Mechanical & Aeronautical Engineering
3/1995 – 3/1997 UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
Technical assistant, Education & Outreach
National Center for Supercomputing Applications (NCSA)
6/1993 – 6/1995 UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
Laboratory assistant
Department of Animal Sciences

PROFESSIONAL LICENSURE

- Professional Engineer, Florida, license #73986.

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HONORS AND AWARDS

- Awards and Recognition
 - Teaching incentive program award, 2011/04/22. University of Central Florida.
 - Assistant professor research excellence award, 2009/11/13. Department of Civil, Environmental, and Construction Engineering, University of Central Florida.
 - Excellence in undergraduate teaching award, 2009/02/06. College of Engineering and Computer Science, University of Central Florida.
 - Undergraduate teaching award, 2008/11/07. Department of Civil, Environmental, and Construction Engineering, University of Central Florida.
 - Best poster award, 2008/07/29. “Post-earthquake bridge repair cost evaluation methodology.” *6th National Seismic Conference on Bridges and Highways*, poster. Charleston, SC.
- Media
 - Engineering News-Record, 2012/07/02. “Graphical interface makes quake tool simpler to use.”

TEACHING AND EDUCATION

COURSES AT UCF

- EGN 3310 Engineering Mechanics – Statics, Undergraduate
- CES 4100 Structural Analysis I, Undergraduate
- CES 6010 Structural Reliability, Graduate
- CES 6220 Wind and Earthquake Engineering, Graduate
- CES 6230 Advanced Structural Mechanics, Graduate
- CES 6527 Nonlinear Structural Analysis, Graduate

OTHER COURSES

- Nonlinear and Dynamic Structural Modeling using Open Source Software (ETH), Autumn 2012, Grad
- Assessment of Bridge Performance under Earthquake Loads (ETH), Spring 2013, Grad

STUDENTS

- Post-doctoral fellow research advisor for:
 - Dr. Jun Xia, Fall 2012 to Fall 2013.
- Graduate doctoral (PhD) student dissertation advisor for:
 - Mr. Haider Darwash, Spring 2013-current.
 - Mr. Yasir Al-Lebban, Spring 2013-current.
 - Ms. Manar Fadul, Fall 2012-current. Topic: Fire-structure analysis and hybrid simulation.
 - Mr. Munaf Al-Ramahee, Spring 2012-current. Topic: Nonlinear mechanics of ultra-high performance concrete members.
 - Mr. Mohammad Mehdizadeh Nasrabadi, Fall 2010-current. Topic: Ground motion and uncertainty modeling in reinforced concrete bridge fragilities.

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- Mr. Elie El Zghayar, Fall 2010-current. Topic: Large-scale testing of polyurethane composite repaired structural members.
- Mr. Yulin Xiao, Fall 2009-current. Topic: Performance of ultra-high performance concrete systems.
- Mr. Jun Xia, Fall 2010. Dissertation, University of Central Florida. "Ultra-high performance fiber-reinforced concrete in bridge deck applications."
- Graduate masters (MS) student thesis advisor for:
 - Mr. Haider Al-Jelawy, Fall 2013. Thesis, University of Central Florida. "Experimental and numerical investigations bond bond durability of CFRP-strengthened concrete members subjected to environmental exposure."
 - Ms. Cara Johnson, Spring 2013. Thesis, University of Central Florida. "Characterization of impact damage and fiber reinforced polymer repair systems for metallic utility poles."
 - Mr. Nnadozie Dike, Summer 2012. Thesis, University of Central Florida. "Performance of mechanical and non-mechanical connections to GFRP components."
 - Mr. Robert Slade, Spring 2012. Thesis, University of Central Florida. "Failure analysis of impact-damaged metallic poles repaired with fiber reinforced polymer composites."
 - Mr. Diego Espinosa, Spring 2012. Thesis, University of Central Florida. "Resilience of bridges following aftershocks."
 - Mr. Christopher Vanek, Fall 2010. Thesis, University of Central Florida. "Computational hurricane hazard analysis - a performance-based engineering view."
 - Mr. Elie El Zghayar, Summer 2010. Thesis, University of Central Florida. "Transfer and development length of strands in post-tensioned members after anchor head failure."
 - Mr. Kevin O'Neill, Spring 2010. Thesis, University of Central Florida. "Feasibility study of lightweight high-strength hollow core balsa-FRP composite beams under flexure."
 - Mr. Zachary Haber, Spring 2010. Thesis, University of Central Florida. "On the use of polyurethane matrix carbon fiber composites for strengthening concrete structures."
 - Mr. Vijay Mishra, Spring 2010. Thesis, University of Central Florida. "Impact of hurricanes on structures - A performance-based engineering view."
 - Mr. Kyle Cronin, Fall 2009. Thesis, University of Central Florida. "Response sensitivity of highway bridges to random multi-component earthquake excitation."
 - Mr. Michael Olka, Spring 2009, co-advisor L. Zhao. Thesis, University of Central Florida. "Flexural mechanical durability of concrete beams strengthened by externally-bonded CFRP sheets."
- Undergraduate student research advisor for:
 - Mr. Justin Bartusek (CECE), Fall 2012 to current.
 - Mr. Kyle Paradis (CECE), Summer 2012 to Fall 2013.
 - Mr. Daniel Kellner (CECE), Summer 2012 to Summer 2013.
 - Mr. Matthew Adamira (CECE), Spring 2012 to Summer 2013.
 - Ms. Noelle Crosby (CECE), Summer 2012 to Spring 2013.
 - Mr. Kevin Lachat (RAMP), Fall 2011 to Spring 2012.
 - Mr. James Duryea (CECE), Spring 2011 to Fall 2012.
 - Ms. Patricia AuBuchon (YES-RAMP), Spring 2011 to Spring 2012.
 - Mr. Brice Latham (CECE), Spring 2011 to Spring 2012.
 - Mr. Daniel Riquer (CECE), Fall 2010 to Spring 2011.

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- Mr. Mark Bacal (CECE), Summer 2010 to Fall 2010.
 - Mr. Nick Najdovski (CECE), Summer 2010 to Spring 2012.
 - Ms. Cara Brown (CECE), Spring 2010 to Summer 2011.
 - Mr. Andrew Kozma (CECE), Summer 2009 to Fall 2009.
 - Mr. Charles Williams (CECE), Spring 2009 to Spring 2010.
 - Ms. Jasna Tomasevic (CECE), Spring 2009 to Spring 2010.
 - Mr. Robert Slade (CECE), Fall 2008 to Summer 2010.
 - Ms. Katherine Luetzow (CECE), Fall 2006 to Fall 2007.
 - Mr. Kaare Kurtzke (MMAE), Fall 2006 to Spring 2007.
- Independent study/research advisor for:
 - Mr. Robert Slade (CES 4912 Summer 2010)
 - Ms. Jasna Tomasevic (CES 4906 Spring 2010)
 - Mr. Charles Williams (CES 4906 Fall 2009)
 - Mr. Justin Quillen (CES 6908 Fall 2007)

RESEARCH

RESEARCH INTERESTS

- Wind and earthquake engineering, response of structures to extreme dynamic loads
- Performance-based engineering, multiple-hazard assessment, sustainability assessment
- Structural reliability and engineering under uncertainty
- Nonlinear analysis and high-performance computing
- Bridge engineering, high-performance materials and composites

PEER-REVIEWED/ARCHIVAL JOURNALS

UCF students are indicated in all publications using the suffix [†].

1. Xiao, Y.[†], Xia, J.[†], **Mackie, K.R.**, Al-Ramahee, M., and Mirmiran, A. (2014). "Dowel action and shear strength contribution of high strength rebar embedded in ultra-high performance fiber reinforced concrete." *Engineering Structures* (Elsevier), submitted January 2014.
2. **Mackie, K.R.**, Kucukvar, M.[†], Tatari, O., and Elgamal, A. (2014). "Sustainability metrics for performance-based seismic bridge response." *Journal of Structural Engineering* (ASCE), submitted November 2013.
3. Vassiliou, M.F., **Mackie, K.R.**, and Stojadinović, B. (2014). "Dynamic response analysis of solitary flexible rocking bodies: Modeling and behavior under pulse-like ground excitation." *Earthquake Engineering and Structural Dynamics* (Wiley), accepted January 2014.
4. Xia, J.[†], **Mackie, K.R.** (2014). "Axisymmetric fiber orientation distribution of short straight fibers in fiber reinforced concrete." *ACI Materials Journal* (ACI), accepted November 2013.
5. Champion, W.[†], Cooper, C.D., **Mackie, K.R.**, and Cairney, P. (2014). "Development of a chemical kinetic model for a biosolids fluidized-bed gasifier and the effects of operating parameters on syngas quality." *Journal of the Air and Waste Management Association* (Taylor & Francis), 64(2): 160-174.
6. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.R.** (2013). "Development length of high-strength steel rebar in ultra-high performance concrete." *Journal of Materials in Civil Engineering* (ASCE), 25(8): 991-998.

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7. El Zghayar, E.[†], **Mackie, K.R.**, Haber, Z.B.[†], and Potter, W. (2013). "Secondary anchorage in post-tensioned bridge systems." *ACI Structures Journal* (ACI), 110(4): 629-638.
8. **Mackie, K.R.**, Lu, J., and Elgamal, A. (2012). "Performance-based earthquake assessment of bridge systems including ground-foundation interaction." *Soil Dynamics and Earthquake Engineering* (Elsevier), 42: 184-196.
9. Amini, H.R.[†], Reinhart, D.R., and **Mackie, K.R.** (2012). "Determination of first-order landfill gas modeling parameters and uncertainties." *Waste Management* (Elsevier), 32: 305-316.
10. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.** (2012). "Experimental evaluation of aluminum bridge deck system." *Journal of Bridge Engineering* (ASCE), 17(1): 97-106.
11. Haber, Z.B.[†], **Mackie, K.R.**, and Zhao, L. (2012). "Mechanical and environmental loading of concrete beams strengthened with epoxy and polyurethane matrix carbon fiber laminates." *Construction and Building Materials* (Elsevier), 26: 604-612.
12. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2011). "Bridge damage and loss scenarios calibrated by schematic design and cost estimation of repairs." *Earthquake Spectra* (EERI), 27(4): 1127-1145.
13. Xia, J.[†], **Mackie, K.R.**, Saleem, M.A., and Mirmiran, A. (2011). "Shear failure analysis on ultra-high performance concrete beams reinforced with high strength steel." *Engineering Structures* (Elsevier), 33: 3597-3609.
14. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.R.** (2011). "Ultra-high-performance concrete bridge deck reinforced with high-strength steel." *ACI Structures Journal* (ACI), 108(5): 601-609.
15. **Mackie, K.R.**, Cronin, K.J.[†], and Nielson, B.G. (2011). "Response sensitivity of highway bridges to randomly oriented multi-component earthquake excitation." *Journal of Earthquake Engineering* (Taylor & Francis), 15(6): 850-876.
16. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2010). "Performance-based post-earthquake repair metrics for RC bridges." *ACI Special Publication* (ACI), 271: 103-124.
17. Aviram, A., **Mackie, K.R.**, and Stojadinović, B. (2010). "Nonlinear modeling of bridge structures in California." *ACI Special Publication* (ACI), 271: 1-26.
18. Haleem, K.M.[†], Abdel-Aty, M., and **Mackie, K.R.** (2010). "Using a reliability process to reduce uncertainty in predicting crashes at unsignalized intersections." *Accident Analysis and Prevention* (Elsevier), 42(2): 654-666.
19. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2010). "Post-earthquake bridge repair cost and repair time estimation methodology." *Earthquake Engineering and Structural Dynamics* (Wiley), 39(3): 281-301.
20. Figueroa, V.K.[†], **Mackie, K.R.**, Guarriello, N.[†], and Cooper, C.D. (2009). "A robust method for estimating landfill methane emissions." *Journal of the Air and Waste Management Association* (A&WMA), 59: 925-935.
21. **Mackie, K.R.**, and Cooper, C.D. (2009). "Landfill gas emission prediction using Voronoi diagrams and importance sampling." *Environmental Modelling and Software* (Elsevier), 24(10): 1223-1232.
22. Aviram, A., **Mackie, K.R.**, and Stojadinović, B. (2008). "Effect of abutment modeling on the seismic response of bridge structures." *Earthquake Engineering and Engineering Vibration* (Springer), 7(4): 395-402.
23. **Mackie, K.R.**, and Stojadinović, B. (2007). "Performance-based seismic bridge design for damage and loss limit states." *Earthquake Engineering and Structural Dynamics* (Wiley), 36(13): 1953-1971.
24. **Mackie, K.R.**, and Stojadinović, B. (2007). "R-factor parameterized bridge damage fragility curves." *Journal of Bridge Engineering* (ASCE), 12(4): 500-510.
25. **Mackie, K.R.**, and Stojadinović, B. (2006). "Fourway: a graphical tool for performance-based earthquake engineering." *Journal of Structural Engineering* (ASCE), 132(8): 1274-1283.

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26. **Mackie, K.R.**, and Stojadinović, B. (2006). “Post-earthquake function of highway overpass bridges.” *Earthquake Engineering and Structural Dynamics* (Wiley), 35(1): 77-93.
27. **Mackie, K.**, and Stojadinović, B. (2001). “Probabilistic seismic demand model for California highway bridges.” *Journal of Bridge Engineering* (ASCE), 6(6): 468-481.
28. Cann, I.K.O., Stroot, P.G., **Mackie, K.R.**, White, B.A., and Mackie, R.I. (2001). “Characterization of two novel saccharolytic, anaerobic thermophiles, *Thermoanaerobacterium polysaccharolyticum* sp. nov. and *Thermoanaerobacterium zeae* sp. nov., and emendation of the genus *Thermoanaerobacterium*.” *International Journal of Systematic and Evolutionary Microbiology* (SGM), 51: 293-302.

Abbreviations for journal publishing organizations:

- A&WMA - Air and Waste Management Association
- ACI - American Concrete Institute
- ASCE - American Society of Civil Engineers
- EERI - Earthquake Engineering Research Institute
- SGM - The Society for General Microbiology

TECHNICAL REPORTS

1. Mirmiran, A., **Mackie, K.**, Saleem, M.A., Xia, J.[†], Zohrevand, P., and Xiao, Y.[†](2012). “Alternatives to Steel Grid Decks – Phase II.” *BDK80 977-06 Project Report*, Florida Department of Transportation, Tallahassee FL.
2. El Zghayar, E.A.[†], **Mackie, K.R.**, and Haber, Z.B.[†](2011). “External post-tensioning anchorage.” *BD550-11 Project Report*, Florida Department of Transportation, Tallahassee FL.
3. Slade, R.[†], and **Mackie, K.R.** (2011). “FRP composite repair of vehicle impact damaged highway sign structures.” *BDK78 988-01 Project Report*, Florida Department of Transportation, Tallahassee FL.
4. Bolyard, S.J.[†], **Mackie, K.R.**, and Cooper, C.D. (2011). “Monitoring and modeling to determine hydrogen sulfide emissions and dispersion from Florida construction and demolition landfills.” *Project Report*, The Hinkley Center for Solid and Hazardous Waste Management, University of Florida, Gainesville FL.
5. Aviram, A., Stojadinović, B., Parra-Montesinos, G.J., and **Mackie, K.R.** (2010). “Structural response and cost characterization of bridge construction using seismic performance enhancement strategies.” *PEER Report No. 2010/01*, Pacific Earthquake Engineering Research Center, University of California, Berkeley CA.
6. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.R.** (2009). “Alternatives to steel grid decks.” *BD015-22 Project Report*, Florida Department of Transportation, Tallahassee FL.
7. Haber, Z.B.[†], **Mackie, K.R.**, Zhao, L., and Olka, M.[†](2009). “Thermo-mechanical durability of carbon fiber reinforced polymer strengthened reinforced concrete beams.” *BD550-06 Project Report*, Florida Department of Transportation, Tallahassee FL.
8. Aviram, A., **Mackie, K.R.**, and Stojadinović, B. (2008). “Guidelines for nonlinear analysis of bridge structures in California.” *PEER Report No. 2008/03*, Pacific Earthquake Engineering Research Center, University of California, Berkeley CA.
9. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2008). “Integrated probabilistic performance-based evaluation of benchmark reinforced concrete bridges.” *PEER Report No. 2007/09*, Pacific Earthquake Engineering Research Center, University of California, Berkeley CA.
10. **Mackie, K.R.**, and Stojadinović, B. (2005). “Fragility basis for California highway overpass bridge seismic decision making.” *PEER Report No. 2005/02*, Pacific Earthquake Engineering Research Center, University of California, Berkeley CA.

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11. **Mackie, K.**, and Stojadinović, B. (2003). “Seismic demands for performance-based design of bridges.” *PEER Report No. 2003/16*, Pacific Earthquake Engineering Research Center, University of California, Berkeley CA.

PEER-REVIEWED/REFEREED CONFERENCES AND PROCEEDINGS

1. Qin, J., Stojadinović, B., and **Mackie, K.R.** (2013). “A model for bridge seismic performance correlation.” In Proceedings of *11th International Conference on Structural Safety & Reliability (ICOSSAR)*, June 16-20, 2013. New York, NY.
2. Lu, J., **Mackie, K.R.**, Elgamal, A., and Shamsabadi, A. (2012). “A framework for performance-based earthquake engineering of bridge-abutment systems.” In Proceedings of *GeoCongress 2012*, March 25-29, 2012. Oakland, CA.
3. **Mackie, K.R.**, Lu, J., and Elgamal, A. (2010). “User interface for performance-based earthquake engineering: A single bent bridge pilot investigation.” In Proceedings of *9th US National and 10th Canadian Conference on Earthquake Engineering*, July 25-29, 2010. Toronto, Canada.
4. Aviram, A., **Mackie, K.R.**, and Stojadinović, B. (2010). “Cost-effectiveness of seismic isolation and fiber-reinforced concrete in typical bridge construction in California.” In Proceedings of *9th US National and 10th Canadian Conference on Earthquake Engineering*, July 25-29, 2010. Toronto, Canada.
5. Aviram, A., **Mackie, K.R.**, and Stojadinović, B. (2010). “Structural performance of seismically isolated and fiber-reinforced concrete bridges.” In Proceedings of *9th US National and 10th Canadian Conference on Earthquake Engineering*, July 25-29, 2010. Toronto, Canada.
6. **Mackie, K.R.** (2010). “Sensitivities in repair cost and repair time metrics for seismic bridge response.” In Proceedings of *ASCE Structures Congress (19th A&C Specialty Conference)*, May 12-15, 2010. Orlando, FL.
7. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.R.** (2010). “Tube-based composite deck system for moveable bridges.” In Proceedings of *2010 Concrete Bridge Conference*, February 24-26, 2010. Phoenix, AZ.
8. Nielson, B.G., and **Mackie, K.R.** (2009). “Tracking uncertainties from component level to system level fragility analyses through simulation.” In Proceedings of *10th International Conference on Structural Safety and Reliability (ICOSSAR)*, September 13-17, 2009. Osaka, Japan.
9. Haleem, K.M.[†], Abdel-Aty, M., **Mackie, K.**, and Santos, J.B. (2009). “Using a reliability process to reduce uncertainty in predicting crashes at unsignalized intersections.” In Proceedings of the *88th Transportation Research Board Annual Meeting*, January 11-15, 2009. Washington, DC.
10. Shin, H., Arduino, P., Kramer, S.L., and **Mackie, K.** (2008). “Seismic response of a typical highway bridge in liquefiable soil.” In Proceedings of the *4th Decennial Geotechnical Earthquake Engineering and Soil Dynamics Conference*, May 18-22, 2008. Sacramento, CA.
11. **Mackie, K.R.** (2007) “Probabilistic seismic bridge demand models with uncertain intensity and response.” In Proceedings of the *3rd International Conference on Structural Engineering, Mechanics, and Computation*, September 10-12, 2007. Cape Town, South Africa.
12. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2007) “Post-earthquake bridge repair cost sensitivity to ground motion scaling.” In Proceedings of the *3rd International Conference on Structural Engineering, Mechanics, and Computation*, September 10-12, 2007. Cape Town, South Africa.
13. **Mackie, K.**, and Stojadinović, B. (2007). “Performance of benchmark bridge structures.” In Proceedings of *ASCE Structures Congress*, May 16-19, 2007. Long Beach, CA.
14. **Mackie, K.**, Wong, J-M., and Stojadinović, B. (2007) “Comparison of post-earthquake highway bridge repair costs.” In Proceedings of *ASCE Structures Congress*, May 16-19, 2007. Long Beach, CA.
15. **Mackie, K.R.**, and Stojadinović, B. (2006). “Fragilities of PEER center testbed bridges.” In Proceedings of the *1st European Conference on Earthquake Engineering and Seismology*, September 3-8, 2006. Geneva, Switzerland.

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16. **Mackie, K.R.**, and Stojadinović, B. (2006). “Probabilistic repair cost evaluation for the UC Berkeley seismic replacement building using the Fourway graphical method.” In Proceedings of the *8th US National Conference on Earthquake Engineering*, April 18-22, 2006. San Francisco, CA.
17. **Mackie, K.**, and Stojadinović, B. (2002). “Design parameter sensitivity in bridge probabilistic seismic demand models.” In Proceedings of the *7th US National Conference on Earthquake Engineering*, July 21-25, 2002. Boston, MA.
18. **Mackie, K.**, and Stojadinović, B. (2002). “Relation between probabilistic seismic demand analysis and incremental dynamic analysis.” In Proceedings of the *7th US National Conference on Earthquake Engineering*, July 21-25, 2002. Boston, MA.
19. **Mackie, K.**, and Stojadinović, B. (2002). “Optimal probabilistic seismic demand model for typical highway overpass bridges.” In Proceedings of the *12th European Conference on Earthquake Engineering*, September 9-13, 2002. London, United Kingdom.

NON-REFEREED CONFERENCES AND PROCEEDINGS

1. Tsiavos, A., Vassiliou, M.F., **Mackie, K.R.**, and Stojadinović, B. (2013). “Comparison of the inelastic response of base-isolated structures to near-fault and far-fault ground motions.” In Proceedings of *Vienna Congress on Recent Advances in Earthquake Engineering and Structural Dynamics (VEESD)*, August 28-30, 2013. Vienna, Austria.
2. Xiao, Y.[†], Xia, J.[†], **Mackie, K.**, and Mirmiran, A. (2013). “Dowel action and shear strength contribution of high strength rebar embedded in ultra-high performance fiber reinforced concrete.” In Proceedings of *RILEM-fib-AFGC International Symposium on Ultra-High Performance Fiber-Reinforced Concrete*, October 1-3, 2013. Marseille, France.
3. Tsiavos, A.D., Vassiliou, M.F., **Mackie, K.R.**, and Stojadinović, B. (2013). “ $R_Y - \mu - T_N$ relations for seismically isolated structures.” In Proceedings of *Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN)*, June 12-14, 2013. Kos, Greece.
4. Vassiliou, M.F., **Mackie, K.R.**, and Stojadinović, B. (2013). “Rocking response of slender, flexible columns under pulse excitation.” In Proceedings of *Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN)*, June 12-14, 2013. Kos, Greece.
5. Vassiliou, M.F., **Mackie, K.R.**, and Stojadinović, B. (2013). “Rocking response of simple systems under pulse excitation using FEM software.” In Proceedings of *10th HSTAM International Congress on Mechanics*, May 25-27, 2013. Chania, Greece.
6. **Mackie, K.R.** (2012). “Performance-based seismic design and assessment of bridges.” In Proceedings of *28th US-Japan Bridge Engineering Workshop*, October 8-10, 2012. Portland, OR.
7. **Mackie, K.R.**, Lu, J., and Elgamal, A. (2012). “Performance-based assessment of coupled bridge-ground systems.” In Proceedings of *15th World Conference on Earthquake Engineering*, September 24-28, 2012. Lisbon, Portugal.
8. Mehdizadeh, M.[†], **Mackie, K.R.**, and Nielson, B.G. (2012). “Scaling bias and record selection for fragility analysis.” In Proceedings of *15th World Conference on Earthquake Engineering*, September 24-28, 2012. Lisbon, Portugal.
9. Forcellini, D., Tarantino, A.M., Elgamal, A., Lu, J., and **Mackie, K.R.** (2012). “Performance-based seismic assessment of isolated bridge configurations on deformable soils.” In Proceedings of *15th World Conference on Earthquake Engineering*, September 24-28, 2012. Lisbon, Portugal.
10. **Mackie, K.R.**, Suarez, V., and Kwon, O-S. (2011). “Seismic performance assessment of concrete bridges designed by displacement-based methods.” In Proceedings of *27th US-Japan Bridge Engineering Workshop*, November 7-9, 2011. Tsukuba, Japan.
11. Elgamal, A., Forcellini, D., Lu, J., Mackie, K., and Tarantino, A.M. (2011). “Seismic vulnerability assessment of bridges adopting a performance-based earthquake engineering approach.” In Proceedings of *ANIDIS 2011 - XIV Convegno L’Ingegneria Sismica in Italia*, September 18-22, 2011. Bari, Italy.

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12. Haber, Z.B.[†], Brown, C.I.[†], and **Mackie, K.R.** (2011). “Effect of environmental conditioning on mechanical properties of polyurethane carbon composites.” In Proceedings of *SAMPE 2011*, May 23-26, 2011. Long Beach, CA.
13. **Mackie, K.R.** (2011). “System-level calibration of bridge component damage states.” In Proceedings of *ASCE Structures Congress*, April 14-16, 2011. Las Vegas, NV.
14. Haber, Z.B.[†], and **Mackie, K.R.** (2010). “Short-term durability of polyurethane matrix carbon composites for civil infrastructure applications.” In Proceedings of *Structural Faults and Repair*, June 15-17, 2010. Edinburgh, Scotland.
15. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.R.** (2010). “Ultra-high performance concrete light-weight bridge deck for moveable bridges.” In Proceedings of *2010 PCI Annual Convention & Bridge Conference and Third International fib Congress*, May 29-June 2, 2010. Washington, DC.
16. Saleem, M.A., Mirmiran, A., Xia, J.[†], and **Mackie, K.R.** (2010). “Alternative deck systems for moveable bridges.” In Proceedings of *ASCE Structures Congress*, May 12-15, 2010. Orlando, FL.
17. Haber, Z.B.[†], Zghayar, E.[†], **Mackie, K.R.**, and Potter, W. (2010). “External anchorage failure and tendon pull-out tests on bridge piers.” In Proceedings of *ASCE Structures Congress*, May 12-15, 2010. Orlando, FL.
18. Slade, R.[†], Haber, Z.B.[†], and **Mackie, K.R.** (2010). “GFRP bridge deck systems for skewed bridges: An analytical investigation on deck orientation.” In Proceedings of *ASCE Structures Congress*, May 12-15, 2010. Orlando, FL.
19. Xia, J.[†], **Mackie, K.R.**, Saleem, M.A., and Mirmiran, A. (2010). “System level finite element analysis of two moveable bridge deck systems.” In Proceedings of *2010 FHWA Bridge Engineering Conference*, April 8-9, 2010. Orlando, FL.
20. Lu, J., **Mackie, K.**, and Elgamal, A. (2010). “Performance-based earthquake evaluation of a single column bridge system.” In Proceedings of *7th International Conference on Urban Engineering & 5th International Conference on Earthquake Engineering*, March 3-5, 2010. Tokyo, Japan.
21. **Mackie, K.R.**, and Nielson, B.G. (2009). “Uncertainty quantification in analytical bridge fragility curves.” In Proceedings of *TCLÉE 2009* (Technical Council on Lifeline Earthquake Engineering), June 28-July 1, 2009. Oakland, CA.
22. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2009). “Seismic risk evaluation for the baseline PEER testbed bridge.” In Proceedings of *TCLÉE 2009* (Technical Council on Lifeline Earthquake Engineering), June 28-July 1, 2009. Oakland, CA.
23. **Mackie, K.R.**, Wong, J-M., and Stojadinović, B. (2008). “Probabilistic methodologies for prediction of post-earthquake repair costs and repair times.” In Proceedings of the *14th World Conference on Earthquake Engineering*, October 12-17, 2008. Beijing, China.
24. Sextos, A., **Mackie, K.**, Stojadinović, B., and Taskari, O. (2008). “Simplified P-y relationships for modeling embankment-abutment systems of typical California bridges.” In Proceedings of the *14th World Conference on Earthquake Engineering*, October 12-17, 2008. Beijing, China.
25. Aviram, A., **Mackie, K.**, and Stojadinović, B. (2008). “Epistemic uncertainty of seismic response estimates for reinforced concrete bridges.” In Proceedings of the *14th World Conference on Earthquake Engineering*, October 12-17, 2008. Beijing, China.
26. Terzic, V., **Mackie, K.R.**, and Stojadinović, B. (2008). “Experimental evaluation of the residual axial load capacity of circular bridge columns.” In Proceedings of the *14th World Conference on Earthquake Engineering*, October 12-17, 2008. Beijing, China.
27. **Mackie, K.**, Wong, J-M., and Stojadinović, B. (2008). “Post-earthquake bridge repair cost evaluation methodology.” In Proceedings of the *6th National Seismic Conference on Bridges and Highways*, July 27-30, 2008. Charleston, SC.

KEVIN R. MACKIE, Ph.D., P.E.

Department of Civil, Environmental, and Construction Engineering
University of Central Florida, Orlando, FL 32816-2450
Tel: (407) 823-2857, Fax: (407) 823-3315, Email: Kevin.Mackie@ucf.edu

28. Wong, J-M., **Mackie, K.**, Porter, R., and Stojadinović, B. (2008). “Reinforced concrete bridge seismic damage and loss scenarios.” In Proceedings of the *6th National Seismic Conference on Bridges and Highways*, July 27-30, 2008. Charleston, SC.
29. Aviram, A., **Mackie, K.**, and Stojadinović, B. (2008). “Effect of abutment modeling on the seismic response of bridge structures.” In Proceedings of the *6th National Seismic Conference on Bridges and Highways*, July 27-30, 2008. Charleston, SC.
30. Figueroa, V.K.[†], Cooper, C.D., and **Mackie, K.R.** (2008). “Estimating landfill greenhouse gas emissions from measured ambient methane concentrations and dispersion modeling.” In Proceedings of the *101st Air & Waste Management Association Annual Conference*, June 24-27, 2008. Portland, OR.
31. **Mackie, K.R.**, and Stojadinović, B. (2007). “Three-dimensional ground motion scaling for highway bridges.” In Proceedings of the *9th Canadian Conference on Earthquake Engineering*, June 26-29, 2007. Ottawa, Canada.
32. Stojadinović, B., and **Mackie, K.R.** (2007). “Performance-based seismic bridge design for repair cost limit state.” In Proceedings of the *1st US-Italy Seismic Bridge Workshop*, April 18-20, 2007. Pavia, Italy.
33. **Mackie, K.**, Wong, J-M., and Stojadinović, B. (2006). “Method for post-earthquake bridge repair cost estimation.” In Proceedings of the *5th National Seismic Conference on Bridges and Highways*, September 18-20, 2006. San Francisco, CA.
34. Wong, J-M., **Mackie, K.**, and Stojadinović, B. (2006). “Bayesian updating of bridge fragility curves using sensor data.” In Proceedings of the *5th National Seismic Conference on Bridges and Highways*, September 18-20, 2006. San Francisco, CA.
35. **Mackie, K.**, and Stojadinović, B. (2006). “Seismic vulnerability of typical multi-span California highway bridges.” In Proceedings of the *5th National Seismic Conference on Bridges and Highways*, September 18-20, 2006. San Francisco, CA.
36. Wong, J-M., **Mackie, K.**, and Stojadinović, B. (2006). “Bayesian updating of bridge fragility curves using sensor data.” In Proceedings of the *3rd International Conference on Bridge Maintenance, Safety and Management*, July 16-19, 2006. Porto, Portugal.
37. **Mackie, K.R.**, and Stojadinović, B. (2005). “Comparison of incremental dynamic, cloud, and stripe methods for computing probabilistic seismic demand models.” In Proceedings of the *ASCE Structures Congress*, April 20-24, 2005. New York, NY.
38. **Mackie, K.**, and Stojadinović, B. (2004). “Improving probabilistic seismic demand models through refined intensity measures.” In Proceedings of the *13th World Conference on Earthquake Engineering*, August 1-6, 2004. Vancouver, Canada.
39. **Mackie, K.**, and Stojadinović, B. (2004). “Residual displacement and post-earthquake capacity of highway bridges.” In Proceedings of the *13th World Conference on Earthquake Engineering*, August 1-6, 2004. Vancouver, Canada.
40. **Mackie, K.**, and Stojadinović, B. (2004). “Fragility curves for reinforced concrete highway overpass bridges.” In Proceedings of the *13th World Conference on Earthquake Engineering*, August 1-6, 2004. Vancouver, Canada.
41. **Mackie, K.**, and Stojadinović, B. (2004). “Post-earthquake function of highway overpass bridges.” In Proceedings of the *International Workshop on Performance-Based Seismic Design Concepts and Implementations*, June 28-July 1, 2004. Bled, Slovenia. Editors P. Fajfar and H. Krawinkler, *PEER Report No. 2004/05*, Pacific Earthquake Engineering Research Center, University of California, Berkeley, p53-64.
42. **Mackie, K.** (2004). “Degradation of reinforced concrete column axial strength.” In Proceedings of the *5th International PhD Symposium in Civil Engineering*, June 16-19, 2004. Delft, Netherlands.
43. **Mackie, K.**, and Stojadinović, B. (2002). “Probabilistic seismic demand models for multi-span highway overpass bridges.” In Proceedings of the *15th ASCE Engineering Mechanics Conference*, June 2-5 2002. New York, NY.

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Department of Civil, Environmental, and Construction Engineering
University of Central Florida, Orlando, FL 32816-2450
Tel: (407) 823-2857, Fax: (407) 823-3315, Email: Kevin.Mackie@ucf.edu

44. Mackie, K., and Stojadinović, B. (2002). "Bridge abutment model sensitivity for probabilistic seismic demand evaluation." In Proceedings of the *3rd National Seismic Conference & Workshop on Bridges and Highways*, April 28-May 1 2002. Portland, OR.
45. Cann, I.K.O., King, M.R., Mackie, K.R., White, B.A., and Mackie, R.I. (1996). "Molecular cloning, sequencing and biochemical characterization of the thermostable S-layer associated endoglucanase gene from strain KM-THCJ, a novel thermophilic bacterium." In Abstracts of the *International Conference on the Biology, Ecology and Biotechnology of Thermophilic Microorganisms*, September 4-7, 1996. Athens, GA.
46. Cann, I.K.O., Mackie, K.R., White, B.A., and Mackie, R.I. (1996). "Cloning, sequencing and expression of a thermostable endoglucanase from the novel thermophilic bacterium strain KM-THCJ in *Escherichia coli*." In Abstracts of the *96th General Meeting of the American Society for Microbiology*, May 19-23 1996. New Orleans, LA.
47. Mackie, R.I., Mackie, K.R., Blascheck, H.P., and White, B.A. (1994). "Use of DNA fingerprinting to characterize and compare Clostridial isolates from environmental samples." In Abstracts of the *7th International Symposium on Genetic and Industrial Microbiology*, June 26-July 1 1994. Montreal, Canada.

RECENT SELECT PRESENTATIONS, SEMINARS, LECTURES, POSTERS

- 2013/03/20. "Quantifying seismic bridge performance in terms of loss and sustainability." *Aristotle University*, invited presentation. Thessaloniki, Greece.
- 2012/10/27. "BridgePBEE workshop & training session." *PEER Annual Meeting*, workshop facilitator. Berkeley, CA.
- 2012/10/26. "Performance-based applications using BridgePBEE." *PEER Annual Meeting*, oral presentation. Berkeley, CA.
- 2012/10/09. "Performance-based seismic design and assessment of bridges." *28th US-Japan Bridge Engineering Workshop*, invited presentation. Portland, OR.
- 2012/03/30. "Ultra-high performance concrete bridge decks reinforced with high-strength steel or fiber reinforced polymers." *ASCE Structures Congress*, oral presentation. Chicago, IL.
- 2011/11/08. "Seismic performance assessment of concrete bridges designed by displacement-based methods." *27th US-Japan Bridge Engineering Workshop*, invited presentation. Tsukuba, Japan.
- 2011/10/01. "Enabling technologies for bridge-ground simulation and PBEE." *PEER Annual Meeting*, oral presentation. Berkeley, CA.
- 2011/10/01. "Translating simulated bridge-ground response into decision metrics." *PEER Annual Meeting*, oral presentation. Berkeley, CA.
- 2011/09/22. "Repair of impact damaged utility poles with FRP." *FDOT Research Forum*, oral presentation. Tallahassee, FL.
- 2011/04/14. "System-level calibration of bridge component damage states." *ASCE Structures Congress*, oral presentation. Las Vegas, NV.
- 2010/12/13. "Earthquake-resistant concrete bridges Future directions." *ACI/JCI Workshop on Seismic Rehabilitation*, invited presentation. Tokyo, Japan.
- 2010/08/11. "Reliability, sensitivity, optimization-enabling technologies." *PEER Transportation Systems Research Program meeting*, oral presentation. Berkeley, CA.
- 2010/07/27. "User interface for performance-based earthquake engineering: A single bent bridge pilot investigation." *9th US National and 10th Canadian Conference on Earthquake Engineering*, oral presentation. Toronto, Canada.
- 2010/05/16. "External anchorage failure and tendon pull-out tests on bridge piers." *ASCE Structures Congress*, oral presentation. Orlando, FL.

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University of Central Florida, Orlando, FL 32816-2450
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- 2010/05/16. “Sensitivities in repair cost & time metrics for seismic bridge response.” *ASCE Structures Congress*, oral presentation. Orlando, FL.
- 2009/10/15. “Bridge PBEE overview & pilot next generation bridge studies.” *PEER Annual Meeting*, oral presentation. San Francisco, CA.
- 2009/08/25. “Pilot PBEE studies for next generation bridges.” *PEER Transportation Systems Research Program meeting*, oral presentation. Berkeley, CA.
- 2009/08/24. “Next-generation bridges: PEER strategy workshop.” *PEER Transportation Systems Research Program workshop*, workshop facilitator. Berkeley, CA.
- 2009/06/29. “Uncertainty quantification in analytical bridge fragility curves.” *TCLEE 2009*, oral presentation. Oakland, CA.
- 2009/03/15. “Probabilistic seismic bridge demand models.” *ACI 341 Committee*, oral presentation. San Antonio, TX.
- 2009/01/30. “Demand, damage, and loss fragilities for California bridges.” *FHWA-UNR Bridge Fragility Modeling Invitational Meeting*, invited presentation. San Francisco, CA.

PROFESSIONAL ACTIVITIES

DEPARTMENT, COLLEGE, AND UNIVERSITY COMMITTEES

- Structural faculty search committee (Fall 2013, Spring 2014)
- UPCC committee (Fall 2013 to current)
- ABET committee, Chair (Fall 2013 to current)
- Associate Chair of Civil, Environmental, and Construction Engineering Department (Fall 2013 to current)
- CECE Promotion & Tenure criteria committee (Summer 2013 to Fall 2013)
- TIP (teaching incentive program) Selection committee (Spring 2012)
- Department chair search committee (Summer 2011 to Spring 2012)
- Infrastructure faculty (x2) search committee (Fall 2010 to Spring 2011)
- ABET outcome assessment subcommittees 8 and 9 (Fall 2010)
- CECE Lecturer search committee (Spring 2010)
- CECE Graduate committee (Spring 2009 to Spring 2012)
- MSS&G Comprehensive exam coordinator (Spring 2009 to Spring 2012)
- PCI Big Beam Contest faculty advisor (Fall 2008 to Spring 2009)
- TIP (Teaching incentive program) Criteria committee, Chair (Spring 2009)
- CECE Undergraduate teaching equipment committee (Fall 2008 to Spring 2009)
- Infrastructure faculty (x3) search committee (Fall 2008 to Spring 2009)
- CECS Research committee (Fall 2008, Fall 2009)
- ABET lab report review (Fall 2006-current)
- ABET outcome assessment subcommittee 8 (Fall 2007)
- Website committee (Summer 2007 to Fall 2007)
- ABET outcome assessment subcommittees 2 and 4 (Spring, Summer 2007)

KEVIN R. MACKIE, Ph.D., P.E.

Department of Civil, Environmental, and Construction Engineering
University of Central Florida, Orlando, FL 32816-2450
Tel: (407) 823-2857, Fax: (407) 823-3315, Email: Kevin.Mackie@ucf.edu

PROFESSIONAL/TECHNICAL SERVICE AND MEMBERSHIP

- Chi Epsilon Civil Engineering Honor Society
 - Faculty advisor (Fall 2008-current)
- Tau Beta Pi Engineering Honor Society
- Alpha Lambda Delta Honor Society
- American Society of Civil Engineers (ASCE) Associate Member
 - Methods of Analysis technical committee – Member (2007-2013)
 - Emerging Analysis Methods for Earthquake Engineering technical committee – **Chair (2010-2013)** and Member (2007-current)
 - Seismic Effects technical committee – **Chair** and Member
- American Concrete Institute (ACI) Member
 - ACI 341 Earthquake-resistant Concrete Bridges technical committee – Member (2007-current)

CONFERENCE COORDINATION

- ASCE Structures Congress, May 2-4, 2012. Pittsburgh, PA. Session organizer and moderator. “Case studies using nonlinear dynamic analysis.”
- ACI Convention, April 3-7, 2011. Tampa, FL. Session organizer and moderator. “Bridge survivability under extreme multi-hazard loading.”
- 9th US National and 10th Canadian Conference on Earthquake Engineering, July 25-29, 2010. Toronto, Canada. Session moderator. “Soil stability.”
- ASCE Structures Congress, May 12-15, 2010. Orlando, FL. Session organizer and moderator. “Research at Florida universities - Structures.”
- ASCE Structures Congress, May 12-15, 2010. Orlando, FL. Session organizer and moderator. “Non-linear analysis methods for earthquake engineering.”
- 2010 ASCE Structures Congress (Orlando, FL) Local organizing committee (Fall 2008 to Spring 2010)

EDITORSHIP AND EDITORIAL SERVICE

- Peer reviewer for technical journals:
 - Journal of Earthquake Engineering, 2012-present
 - Computer-Aided Civil and Infrastructure Engineering, 2006-present
 - ASCE Journal of Engineering Mechanics, 2006-present
 - Earthquake Spectra, 2006-present
 - Earthquake Engineering and Structural Dynamics, 2006-present
 - ASCE Journal of Bridge Engineering, 2007-present
 - ASCE Journal of Structural Engineering, 2008-present
 - Structure and Infrastructure Engineering, 2008-present
 - Engineering Structures, 2009-present
 - Environmental Modelling and Software, 2009-present
 - Construction & Building Materials, 2010-present
 - Journal of Earthquake Engineering, 2012-present

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Department of Civil, Environmental, and Construction Engineering
University of Central Florida, Orlando, FL 32816-2450
Tel: (407) 823-2857, Fax: (407) 823-3315, Email: Kevin.Mackie@ucf.edu

OTHER ACTIVITIES

- Representative on US delegation at 27th and 28th US-Japan Bridge Engineering Workshops.
- ACI representative to joint ACI/JCI workshop on Seismic Rehabilitation, Tokyo, Japan, Fall 2010.
- McGraw-Hill Engineering Focus Group, Dubuque IA, Spring 2010.
- Pearson Higher Education MasteringEngineering development summit, Boston MA, Fall 2009.
- Fundamentals of Engineering exam review (Spring 2008 to Fall 2011)
- Space Alliance Technology Outreach Program (SATOP)