

## **Sez Atamturktur, Ph.D.**

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### **EDUCATION**

- Ph.D. The Pennsylvania State University, Civil Engineering – Structures, 2009.
  - M.S. The Pennsylvania State University, Architectural Engineering – Structures, 2006.
  - B.S. Orta Dogu Teknik Universitesi (ODTU), Architecture, 2002.
  - B.S. Orta Dogu Teknik Universitesi (ODTU), Civil Engineering – Structures (minor), 2002.
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### **PROFESSIONAL EXPERIENCE**

- Assistant Vice-President for Research, Division of Research, Clemson University, 2017 to present.
- Founding Director of the Office of Research Development, Division of Research, Clemson University, 2017 to present.
- Professor of Environmental Engineering and Earth Sciences, Mechanical Engineering, Industrial Engineering and Civil Engineering, 2017 to present.
- Provost's Distinguished Professor, Clemson University, 2017 to present.
- Co-Director, Center of Excellence for Next Generation Computing and Creativity, 2016-2017.
- Founding Director, NSF ADVANCE-funded Tigers ADVANCE Program, 2016 to present.
- Founding Director, NSF NRT-funded Resilient Infrastructure and Environmental Systems (RIES) Engineering and Science Degree Programs, 2016 to present.
- Distinguished Professor of Intelligent Infrastructure, Glenn Department of Civil Engineering, Clemson University, 2015-2017.
- Adjunct Professor in College of Civil Engineering, Tongji University, China, 2015 to present.
- Associate Professor of Civil Engineering, Clemson University, 2013 to present.
- Visiting Professor in the Department of Applied Mechanics, University of Franche-Comté, France, 2013.
- Assistant Professor of Civil Engineering, Clemson University, 2010-2013.
- LTV Technical Staff Member in Applied Physics Division, Los Alamos National Laboratory, 2009.
- Graduate Research Assistant in Applied Physics Division, Los Alamos National Laboratory, 2008.
- Visiting Research Assistant in the Department of Civil Engineering, University of Sheffield UK, 2007.

Research and Teaching Assistant, The Pennsylvania State University, 2004-2009.

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## PUBLICATIONS

### Refereed Journal Publications (in review / in preparation)

\* indicates Atamturktur's graduate students or post-doctoral fellows at the time of the preparation of the manuscript

Chodora E.\*, Ehrett C.\*, Jiang M.\*, Brown, A., Kitchens, C., **Atamturktur**, S., (in preparation), "Design of Engineering Materials under Uncertainty," *Springer Research in Engineering Design*.

Locke R.\*, Sybrandt J.\*, Safro I., and **Atamturktur** S., (in preparation), "Filtering out Environmental Effects from the Dynamic Response of Passing Vehicles," *ASCE Journal of Structural Engineering*.

Martinez M.\*, Broyles J.\*, and **Atamturktur** S., (in preparation), "Concrete Masonry Construction Evaluation: A Review of Experimental Tests and Numerical Models," *Construction and Building Materials* (Elsevier).

Locke R.\* and **Atamturktur** S., (in preparation), "Data-Aware Calibration of Physics-Based Computer Models of Engineering Systems: Quantifying Flexibility of Calibration Campaign," *ASCE Journal of Computing in Civil Engineering*.

Stevens G.N.\*, Chodora E.\*, Brown D.A., and **Atamturktur** S., (to be submitted), "A Bayesian Inference-Based Approach to Empirical Training of Strongly-Coupled Constituent Models," *ASME Journal of Verification, Validation and Uncertainty Quantification*.

Kamath A.\*, Prabhu, S.\*, and **Atamturktur**, S., (to be submitted), "Seismic Risk Assessment of Masonry Arch Bridges in the United States," *Engineering Structures* (Elsevier).

Hu X.\*, Chodora E.\*, Prabhu S.\*, and **Atamturktur** S., (to be submitted), "Extended Constitutive Relation Error Based Damage Detection Approach Considering the Effect of Stiffness and Mass," *Structural Control and Health Monitoring* (Wiley).

Hu X.\*, Chodora E.\*, Prabhu S.\*, Gupte A., and **Atamturktur** S., (submitted, in review), "Model Calibration of Locally Nonlinear Dynamical Systems: Extended Constitutive Relation Error with Multi-Harmonic Coefficients," *Engineering Computation* (Emerald).

Prabhu, S.\*, Ehrett, C., Brown, A., Javanbarg, M., **Atamturktur**, S., (submitted, in review), "Uncertainty Quantification in Fault Tree Analysis: An Application for Business Interruption due to Seismic Hazard," *Risk Analysis* (Wiley).

Martinez M.\*, Huygen, N., Sanders J. and **Atamturktur** S., (submitted, in review), "Structural and Thermal Behavior to Appraise and Optimize Concrete Masonry Units via Experimental Testing and Numerical Modeling," *Computer-Aided Civil and Infrastructure Engineering* (Wiley).

Martinez M.\*, and **Atamturktur S.**, (submitted, in review), “Experimental and Numerical Evaluation of Reinforced Dry-Stacked Concrete Masonry Walls,” *Journal of Building Engineering* (Elsevier).

Prabhu, S.\*, Javanbarg, M., and **Atamturktur, S.**, (submitted, in review), “Multi-hazard Risk Assessment of Industrial Facilities,” *Journal of Risk Research* (Taylor & Francis).

Prabhu S.\*, **Atamturktur S.**, and Dorrance R. (conditionally accepted, in review), "Investigating the Cracks in Granite Slabs at Fort Sumter through Computer Modeling," *APT Bulletin*.

### **Refereed Journal Publications (in print / printed)**

\* indicates Atamturktur's graduate students

\*\* indicates other graduate students

### **Publications in 2018 (4 to date)**

Stevens G.N.\*, **Atamturktur S.**, Brown D.A., Williams B.J., and Unal C., (accepted, in print), “Statistical Inference of Empirical Constituents in Partitioned Analysis from Integral-effect Experiments: An Application in Thermo-Mechanical Coupling,” *Engineering Computation* (Emerald).

Martinez M.\*, **Atamturktur S.**, Ross B., and Thompson J., (accepted, in print), “A Combined Numerical and Experimental Analysis of Dry-Stack Construction,” *Journal of Structural Engineering* (ASCE).

Brown A. and **Atamturktur S.** (accepted, in print), “Nonparametric Functional Calibration of Computer Models,” *Statistica Sinica* (Institute of Statistical Science), DOI: 10.5705/ss.202015.0344.

Yazdekhosti S., Piratla K. R., **Atamturktur S.**, and Khan A. (2017), “Experimental Evaluation of a Vibration-Based Leak-Detection Technique for Water Pipelines,” *Structure and Infrastructure Engineering* (Taylor & Francis), Vol. 14, No. 1, pp. 46-55, <http://dx.doi.org/10.1080/15732479.2017.1327544>

### **Publications in 2017 (7 total)**

Yazdekhosti S.\*, Piratla K. R., **Atamturktur S.** and Khan A. (2017), “Novel vibration-based technique for detecting water pipeline leakage,” *Structure and Infrastructure Engineering*, Vol. 13, No. 06, pp. 731-742.

**Atamturktur, S.**, Ross, B., Thompson, J., and Biggs, D. (2017), “Compressive Strength of Dry-Stacked Concrete Masonry Unit Assemblies,” *Journal of Materials in Civil Engineering*, Vol. 29, No. 2.

Bi, S.\*\*, Prabhu, S.\* , Cogan, S., and **Atamturktur, S.** (2017), “Uncertainty Quantification Metrics with Varying Statistical Information in Model Calibration and Validation,” *AIAA Journal*, Vol. 55, No. 10, pp. 3570-3583.

Hu X.\*, Prabhu S.\*, **Atamturktur S.**, and Cogan, S. (2017), “Mechanistically-Informed Damage

Detection Using Dynamic Measurements: Extended Constitutive Relation Error," *Mechanical Systems and Signal Processing*, Vol. 85, pp. 312-328.

Prabhu, S.\*, **Atamturktur**, S., and Cogan, S. (2017), "Model assessment in scientific computing: Considering robustness to uncertainty in input parameters," *Engineering Computations: International Journal for Computer-Aided Engineering and Software* (Emerald), Vol. 34 Issue: 5, pp. 1700-1723.

Prabhu, S.\* and **Atamturktur**, S. (2017), "Assessment of Strength Degradation of Historic Masonry Monuments Due to Damage: Load Path-based Approach," *Journal of Structural Engineering* (ASCE), Vol. 143, No. 9.

Stevens, G.\* and **Atamturktur**, S., (2017), "Mitigating Error and Uncertainty in Partitioned Analysis: A Review of Verification, Calibration and Validation Methods for Coupled Simulations," *Archives of Computational Methods in Engineering*, Vol. 24, No. 3, pp. 557-571.

#### **Publications in 2016 (5 total)**

Khan, S. M., **Atamturktur**, S., Chowdhury, M., and Rahman, M. (2016), "Integration of structural health monitoring and intelligent transportation systems for bridge condition assessment: current status and future direction." *IEEE Transactions on Intelligent Transportation Systems*, Vol. 17, No. 8, pp. 2107-2122.

Lu J. \*, **Atamturktur** S., and Huang Y. (2016), "Bi-level Resource Allocation Framework for Retrofitting Bridges in a Transportation Network," *TRB Journal*, Vol. 2550, pp. 31-37.

Sevim B., **Atamturktur** S., Altunisik A.C., and Bayraktar A. (2016), "Ambient Vibration Testing and Seismic Behavior of Historical Arch Bridges under Near and Far Fault Ground Motions," *Bulletin of Earthquake Engineering* (Springer), Vol. 14, No. 1, pp. 241-259.

Stevens G. \*, **Atamturktur** S., Lebensohn R., and Kaschner G. (2016), "Experiment-Based Validation and Uncertainty Quantification of Coupled Multi-scale Plasticity Models," *Multidiscipline Modeling in Materials and Structures* (Emerald), Vol. 12, No. 1, pp. 151-176.

Yazdekhosti S. \*, Piratla K. R., **Atamturktur** S. and Khan A. (2016), "Experimental Verification of a Novel Vibration-Based Technique for Detecting Water Pipeline Leakage," *Journal of Structure and Infrastructure Engineering* (Taylor and Francis), Vol. 14, No. 1, pp. 46-55.

#### **Publications in 2015 (11 total)**

Ross B., Roper B. \*, and **Atamturktur** S. (2015), "Detailing Steel Roof Decks to Control Damage from Wind-borne Debris Impact," *Practice Periodical on Structural Design and Construction* (ASCE), Vol. 21, No. 1 pp. 1-8.

**Atamturktur** S., Egeberg M. \*, Stevens G. \*, and Hemez F. (2015), "Defining Coverage of an Operational Domain using a Modified Nearest-Neighbor Metric," *Mechanical Systems and Signal Processing* (Elsevier), Vol. 50-51, pp. 349-361.

- Atamturktur S.**, Hegenderfer J.\*, Williams B., Egeberg M.\*, Lebensohn R., and Unal C. (2015), “A Resource Allocation Framework for Experiment-Based Validation of Numerical Models,” *Journal of Mechanics of Advanced Materials and Structures* (Taylor & Francis), Vol. 22, No. 8, pp. 641-654.
- Atamturktur S.**, Hegenderfer J.\*, Williams B., and Unal C. (2015), “Selection Criterion Based on an Exploration-Exploitation Approach for Optimal Design of Experiments,” *Journal of Engineering Mechanics* (ASCE), Vol. 141, No. 1.
- Atamturktur S.**, Farajpour I.\*, Prabhu S.\* and Haydock A.\* (2015), “Adaptively Weighted Support Vector Regression: Prognostic Application to a Historic Masonry Fort,” *Journal of Performance of Constructed Facilities* (ASCE), Vol. 29, No. 2.
- Atamturktur S.** and Farajpour I.\* (2015), “Resource Allocation for Code Development in Partitioned Models,” *Engineering Computations: International Journal for Computer-Aided Engineering and Software* (Emerald), Vol. 32, No. 7, pp. 1981-2004.
- Atamturktur S.**, Liu Z.\*, Cogan S., and Juang C. H. (2015), “Calibration of Imprecise and Inaccurate Numerical Models Considering Fidelity and Robustness: A Multi-Objective Optimization-Based Approach,” *Structural and Multi-Disciplinary Optimization* (Springer), Vol. 51, No. 3, pp. 659-671.
- Gong W.\*, Huang H., Juang C. H., **Atamturktur S.**, and Brownlow A.\*\* (2015), “Improved Shield Tunnel Design Methodology Incorporating Design Robustness,” *Canadian Geotechnical Journal*, Vol. 52, No. 10, pp. 1575-1591.
- Khoshnevisan S.\*\*, Gong W.\*, Juang C.H., and **Atamturktur S.** (2015), “Efficient Robust Geotechnical Design of Drilled Shafts in Clay Using a Spreadsheet,” *Journal of Geotechnical and Geoenvironmental Engineering* (ASCE), Vol. 141, No. 2.
- Prabhu P.\* and **Atamturktur S.** (2015), “A Review on Prognostic Evaluation of Historic Masonry Structures: Present Challenges and Future Direction,” *The Masonry Society Journal*, Vol. 33, No. 1, pp. 1-12.
- Stevens G.\*, Van Buren K.\*, Wheeler E.\*, and **Atamturktur S.** (2015), “Evaluating the Fidelity and Robustness of Calibrated Numerical Model Predictions: An Application on a Wind Turbine Blade,” *Engineering Computations: International Journal for Computer-Aided Engineering and Software* (Emerald), Vol. 32, No. 3, pp. 621-642.

#### **Publications in 2014 (8 total)**

- Deng Z., Bi S.\*, and **Atamturktur S.**, (2014), “Stochastic Model Updating using Distance Discrimination Analysis,” *Chinese Journal of Aeronautics* (Elsevier), Vol. 27, No. 5, pp. 1188-1198.
- Farajpour I.\* and **Atamturktur S.** (2014), “Partitioned Analysis of Coupled Numerical Models Considering Imprecise Parameters and Inexact Models,” *Journal of Computing in Civil Engineering* (ASCE), Vol. 28, No. 1, pp., 145-155.

- Juang C.H., Wang L.\*, Hsieh H. S., and **Atamturktur S.** (2014), “Robust Geotechnical Design of Braced Excavations in Clays,” *Structural Safety* (Elsevier), Vol. 49, pp. 37-44.
- Li T.\* and **Atamturktur S.** (2014), “Fidelity and Robustness of Detailed Micromodeling, Simplified Micromodeling and Macromodeling Techniques for a Masonry Dome,” *Journal of Performance of Constructed Facilities* (ASCE), Vol. 28, No. 3, pp. 480-490.
- Liu Z.\* , **Atamturktur S.**, and Juang C. H. (2014), “Reliability Based Multi-Objective Robust Design Optimization of Steel Moment Resisting Frame Considering Spatial Variability of Connection Parameters,” *Engineering Structures* (Elsevier), Vol. 76, pp. 393-403.
- Prabhu S.\*, **Atamturktur S.**, Brosnan D., Messier P., and Dorrance R., (2014), “Foundation Settlement Analysis of Fort Sumter National Monument: Model Development and Predictive Assessment,” *Engineering Structures* (Elsevier), Vol. 65, pp. 1-12.
- Van Buren K.\* , **Atamturktur S.**, and Hemez F. (2014), “Model Selection through Robustness and Fidelity Criteria: Modeling the Dynamics of the CX-100 Wind Turbine Blade,” *Journal of Mechanical Systems and Signal Processing* (Elsevier), Vol. 43, No. 1-2, pp. 246-259.
- Wang L.\* , Juang C.H., **Atamturktur S.**, Gong W.\* , Khoshnevisan S.\* , and Hsieh H. S. (2014), “Optimization of Design of Supported Excavations in Multi-layer Strata,” *Journal of GeoEngineering* (TGS), Vol. 9, No. 1, pp. 1-12.

#### **Publications in 2013 (19 total)**

- Van Buren K.\* , Mollineaux M.\*\* , Hemez F., and **Atamturktur S.** (2013), “Simulating the Dynamics of Wind Turbine Blades: Part II, Model Validation & Uncertainty Quantification,” *Wind Energy* (Wiley), Vol. 16, No. 5, pp. 741-758.
- Atamturktur S.**, Gilligan C.\* , and Salyards K. (2013), “Detection of Internal Defects in Concrete Members using Global Vibration Characteristics,” *Materials Journal* (ACI), Vol. 110, No. 5, pp. 529-538.
- Atamturktur S.** and Prabhu S.\* (2013), “Simulation Based Structural Analysis of Fort Sumter Considering Foundation Settlement,” *Structures Magazine*, May, pp. 26-29 (short article).
- Atamturktur S.**, Williams B., Egeberg M.\* , and Unal C. (2013), “Batch Sequential Design of Optimal Experiments for Improved Predictive Maturity in Physics-Based Modeling,” *Structural and Multidisciplinary Optimization* (Springer), Vol. 48, No. 3, pp. 549-569.
- Dalton S.\* , **Atamturktur S.**, Farajpour I.\* , and Juang C.H. (2013), “An Optimization Based Approach for Structural Design Considering Safety, Robustness, and Cost,” *Journal of Engineering Structures* (Elsevier). Vol 57, pp. 356-363.
- Dalton S.\* , **Atamturktur S.**, and Juang C.H. (2013), “Structural Health Monitoring for Sustainable and Resilient Infrastructure Management,” *International Journal of Building, Urban, Interior and Landscape Technology*, Vol. 2, pp. 56-67.



- Farajpour I.\* and **Atamturktur S.** (2013), "Error and Uncertainty Analysis of Inexact and Imprecise Computer Models," *Journal of Computing in Civil Engineering* (ASCE), Vol. 27, No. 4, pp. 407-418.
- Fisher M.\* , **Atamturktur S.**, and Khan A. (2013), "A Novel Vibration-Based Monitoring Technique for Bridge Pier and Abutment Scour," *Journal of Structural Health Monitoring* (Sage), Vol. 12, No. 2, pp. 114-125.
- Fisher M.\* , Chowdhurry Md. N.\* , Khan A., and **Atamturktur S.** (2013), "An Evaluation of Scour Measurement Devices," *Flow Measurement and Instrumentation* (Elsevier), Vol. 33, pp. 55-67.
- Fisher M.\* , Khan A., and **Atamturktur S.** (2013), "Scour Monitoring via Turbulent Open Channel Flow," *Measurement Science and Technology* (IOP Science), Vol. 24, No. 8, pp. 1-14.
- Fisher M.\* , Khan A., and **Atamturktur S.** (2013), "State of the Art in Scour Monitoring," *Sediment Transport: Monitoring, Modeling and Management*, Editors: Khan, A. A., and Wu, W., Nova Science Publishers, Inc. (book chapter).
- Hegenderfer J.\* and **Atamturktur S.** (2013), "Prioritization of Code Development Efforts in Partitioned Analysis," *Computer-Aided Civil and Infrastructure Engineering* (Wiley), Vol. 28, No. 4, pp. 289-306.
- Juang C.H., Liu Z.\* , and **Atamturktur S.** (2013), "Reliability-Based Robust Geotechnical Design of Retaining Walls," *Sound Geotechnical Research to Practice*, ASCE Geotechnical Special Publication (ASCE), pp. 514-524.
- Liu Z.\* , **Atamturktur S.**, and Juang H. (2013), "Performance Based Robust Design Optimization of Steel Moment Resisting Frames," *Journal of Constructional Steel Research* (Elsevier), Vol. 89, pp. 165-174.
- Liu Z.\* , Juang H., and **Atamturktur S.** (2013), "Confidence Level-Based Robust Design of Cantilever Retaining Walls in Sand," *Computers and Geotechnics* (Elsevier), Vol. 52, pp. 16-27.
- Luo Z.\* , **Atamturktur S.**, and Juang C.H. (2013), "Bootstrapping for Characterizing the Effect of Uncertainty in Sample Statistics for Braced Excavations," *Journal of Geotechnical and Geoenvironmental Engineering* (ASCE), Vol. 139, No. 1, pp. 13- 23.
- Prabhu S.\* and **Atamturktur S.** (2013), "Feature Assimilation for Vibration Based Damage Detection," *Journal of Testing and Evaluation* (ASTM), Vol. 41, No. 1, pp. 39-49.
- Prabhu S.\* and **Atamturktur S.** (2013), "Selection of Optimal Sensor Locations Based on Modified Effective Independence Method: Case Study on a Gothic Revival Cathedral," *Journal of Architectural Engineering* (ASCE), Vol. 19, No. 4, pp. 288-301.
- Wang L.\* , Hwang J.H., Juang C.H., and **Atamturktur S.** (2013), "Reliability-Based Design of Rock Slopes – A New Perspective on Design Robustness," *Engineering Geology* (Elsevier), Vol. 154, pp. 56-63.

### Publications in 2012 (13 total)

- Atamturktur S.**, Hemez F., and Laman J. (2012), "Uncertainty Quantification in Model Verification and Validation as Applied to Large Scale Historic Masonry Monuments," *Engineering Structures* (Elsevier), Vol. 43, pp. 221-234.
- Atamturktur S.**, Hemez F., and Laman J. (2012), "Verification and Validation Applied to Finite Element Models of Historic Masonry Monuments," *Engineering Structures* (Elsevier), Vol. 43, pp. 221-234.
- Atamturktur S.** and Laman J. (2012), "Finite Element Model Correlation and Calibration of Historic Masonry Monuments: Review," *Journal of Structural Design of Tall and Special Buildings* (Wiley), Vol. 21, No. 2, pp. 96-113.
- Atamturktur S.**, Li T. \*, Ramage M., and Farajpour I.\* (2012), "Load Carrying Capacity Assessment of a Scaled Masonry Dome: Simulations Validated with Non-Destructive and Destructive Measurements," *Construction and Building Materials* (Elsevier), Vol. 34, pp. 418-429.
- Atamturktur S.** and Sevim B. (2012), "Seismic Performance Assessment of Masonry Tile Domes through Nonlinear Finite-Element Analysis," *Journal of Performance of Constructed* (ASCE), Vol. 26, No. 4, pp. 410-423.
- Farajpour I.\* and **Atamturktur S.** (2012), "Optimization-Based Strong Coupling Procedure for Partitioned Analysis." *Journal of Computing in Civil Engineering* (ASCE), Vol. 26, No. 5, pp. 648-660.
- Juang C.H., Luo Z. \*, **Atamturktur S.**, and Huang H. (2012), "Bayesian Updating of Soil Parameters for Braced Excavations Using Field Observations," *Journal of Geotechnical and Geoenvironmental Engineering* (ASCE), Vol. 139, No. 3, pp. 395-406.
- Juang H., Wang L. \*, **Atamturktur S.**, and Luo Z. (2012), "Reliability-Based Robust and Optimal Design of Shallow Foundations in Cohesionless Soil in the Face of Uncertainty," *Journal of GeoEngineering* (TGS), Vol. 7, No. 3, pp. 75-87.
- Luo Z. \*, **Atamturktur S.**, Cai Y., and Juang C. H. (2012), "Reliability Analysis of Basal-Heave in a Braced Excavation in a 2-D Random Field," *Computers and Geotechnics* (Elsevier), Vol. 39, pp. 27-37.
- Luo Z. \*, **Atamturktur S.**, Cai Y., and Juang C. H. (2012), "Simplified Approach for Reliability-Based Design Against Basal-Heave Failure in A Braced Excavation in Clay," *Journal of Geotechnical and Geoenvironmental Engineering* (ASCE), Vol. 138, No.4, pp. 441-450.
- Luo Z. \*, **Atamturktur S.**, and Juang C.H. (2012), "Effect of Spatial Variability on Probability-Based Design of Excavations Against Basal-Heave," *Geotechnical Special Publication* (ASCE), No. 225, pp. 2876-2884.



Mollineaux M.\*\*, Van Buren K.\*, Hemez F., and **Atamturktur S.** (2012), "Simulating the Dynamics of Wind Turbine Blades: Part I, Model Development and Verification," *Wind Energy* (Wiley), Vol. 16, No. 5, pp. 694-710.

Van Buren K.\* and **Atamturktur S.** (2012), "A Comparative Study: Predictive Modeling of Wind Turbine Blades," *Wind Engineering* (Sage), Vol. 36, No. 3, pp. 235-250.

### **Publications in 2011 (7 total)**

**Atamturktur S.**, Bornn L., and Hemez F. (2011), "Vibration Characteristics of Vaulted Masonry Monuments Undergoing Differential Support Settlement," *Engineering Structures* (Elsevier), Vol. 33, No. 9, pp. 2472-2484.

**Atamturktur S.**, Hemez F., Williams B., Tome C., and Unal C. (2011), "A Forecasting Metric for Predictive Modeling," *Computers and Structures* (Elsevier), Vol. 89, No. 23-24, pp. 2377-2387.

Hemez F. and **Atamturktur S.** (2011), "The Dangers of Sparse Sampling for the Quantification of Margin and Uncertainty," *Reliability Engineering & System Safety* (Elsevier), Vol. 96, No. 9, pp. 1220-1231.

Luo Z.\*, **Atamturktur S.**, Juang C.H., and Lin P.S. (2011), "Probability of Serviceability Failure in a Braced Excavation in a Spatially Random Field: Fuzzy Finite Element Approach," *Computers and Geotechnics* (Elsevier), Vol. 38, No. 8, pp. 1031-1040.

Sevim B., Bayraktar A., Altunışık A. C., **Atamturktur S.**, and Birinci F. (2011), "Assessment of Nonlinear Seismic Performance of a Restored Historical Arch Bridge using Ambient Vibrations," *Nonlinear Dynamics* (Springer), Vol. 63, No. 4, pp. 755-770.

Sevim B., Bayraktar A., Altunışık A.C., **Atamturktur S.**, and Birinci F. (2011), "Finite Element Model Calibration Effects on the Earthquake Response of Masonry Arch Bridges," *Finite Elements in Analysis and Design* (Elsevier), Vol. 47, No. 7, pp. 621-634.

Unal C., Williams B., Hemez F., **Atamturktur S.**, and McClure P. (2011), "Improved Best Estimate Plus Uncertainty Methodology, Including Advanced Validation Concepts, to License Evolving Nuclear Reactors," *Nuclear Engineering and Design* (Elsevier), No. 241, No. 5, pp. 1813-1833.

### **Publications in 2010 (3 total)**

**Atamturktur S.** and Boothby T. (2010), "Stochastic Bayesian Calibration of Finite Element Models of Masonry Vaults," *The Masonry Society Journal* (TMS), Vol. 28, No. 2, pp. 77-93.

**Atamturktur S.**, Fanning P., and Boothby T. (2010), "Traditional and Operational Modal Testing of Masonry Vaults," *Engineering and Computational Mechanics* (Proceedings of the Institution of Civil Engineers), Vol. 163, No. 3, pp. 213-223.

Hemez F., **Atamturktur S.**, and Unal C. (2010), "Defining Predictive Maturity for Validated Numerical Models," *Computers and Structures* (Elsevier), Vol. 88, pp. 497-505.

### **Publications prior to 2010 (2 total)**

**Atamturktur S.**, Pavic A., Reynolds P., and Boothby T. (2009), "Full-Scale Modal Testing of Vaulted Gothic Churches: Lessons Learned," *Experimental Techniques* (Wiley), Vol. 33, No. 4, pp. 65-74.

**Atamturktur S.** and Boothby T. (2007), "The Development of Finite Element Models and the Horizontal Thrust of Guastavino Domes," *The Journal of Preservation Technology* (The Association for Preservation Technology International), Vol. 38, No. 4, pp. 21-29.

### **Conference Proceedings (Full Paper Peer-Reviewed)**

\* indicates publications with *Atamturktur's* students.

**Atamturktur S.** and Brown A. (2015), "State-Aware Calibration for Inferring Systematic Bias in Computer Models of Complex Systems," NAFEMS World Congress, June 21-25, Manchester Grand Hyatt, San Diego Market Place, San Diego, California, USA, ISBN 978-1-910643-24-2.

Stevens G.\* and **Atamturktur S.** (2015), "Experimental Validation and Uncertainty Quantification of Partitioned Models," NAFEMS World Congress, June 21-25, Manchester Grand Hyatt, San Diego Market Place, San Diego, California, USA, ISBN 978-1-910643-24-2.

**Atamturktur S.**, Prabhu S.\*, and Roche G.\* (2014), "Predictive Modeling of Large Scale Historic Masonry Monuments: Uncertainty Quantification and Model Validation," EURO DYN IX International Conference on Structural Dynamics, June 30-July 2, Porto, Portugal.

**Atamturktur S.** and Stevens G.\* (2014), "Uncertainty Inference for Inexact Coupled Numerical Models in Partitioned Analysis," EURO DYN IX International Conference on Structural Dynamics, June 30-July 2, Porto, Portugal.

Juang C.H., Wang L.\* and **Atamturktur S.** (2013), "Keynote: Robust Design of Geotechnical Systems – A New Design Perspective," Proceedings of the 4th International Symposium of Geotechnical Safety and Reliability (ISGSR), Hong Kong, December 5-7. Zhang et al. (eds.), Taylor & Francis Group, London, ISBN 978-1-138-00163-3, pp. 69-78.

Juang C.H., Wang L.\*, Khoshnevisan K.\*\*, and **Atamturktur S.** (2013), "Keynote: Robust Geotechnical Design – Methodology and Applications," Proceedings of the 15th Conference on Current Research in Geotechnical Engineering in Taiwan, Yunlin; Geotechnical Award Lecture, Taiwan Geotechnical Society, September 11-13.

Prabhu S.\* and **Atamturktur S.** (2011), "Feature Assimilation in Structural Health Monitoring of Masonry Construction," Proceedings of 11th North American Masonry Conference, Minneapolis, Minnesota, USA.

**Atamturktur S.** (2009), "Validation of Nonlinear Finite Element Models with Dynamic Tests: an Overview," The Proceedings of College of Engineering Research Symposium, University Park, Pennsylvania, USA.

Boothby T. and **Atamturktur S.** (2007), "A Guide for the Finite Element Analysis of Historic Load Bearing Masonry Structures," Proceedings of 10th North American Masonry Conference, St. Louis, Missouri, USA.

Boothby T., **Atamturktur S.**, Ochsendorf J., Tallon A., and Murray S. (2007), "Structural Modeling of the Vaults of St. Julien in Coulevre, France," Proceedings of 10th North American Masonry Conference, St. Louis, Missouri, USA.

### **Conference Proceedings (Abstract Peer-Reviewed)**

*29 proceedings printed*

*\* indicates publications with Atamturktur's students.*

**Atamturktur S.** and Khan A. (2015), "Vibration-Based Scour Monitoring: Prototype Design, Laboratory Experiments and Field Deployment," IMAC XXXIII A Conference and Exposition on Structural Dynamics, February 2-5, Orlando, FL, USA.

**Atamturktur S.**, Stevens G.\*, and Cheng, Y.\* (2015), "Clustered Parameters of Calibrated Models when Considering Both Fidelity and Robustness," IMAC XXXIII A Conference and Exposition on Structural Dynamics, February 2-5, Orlando, FL, USA.

Roche G.\*, Prabhu S.\*, and **Atamturktur S.** (2015), "Model Validation in Scientific Computing: Considering Robustness to Non-Probabilistic Uncertainty in the Input Parameters," IMAC XXXIII A Conference and Exposition on Structural Dynamics, February 2-5, Orlando, FL, USA.

**Atamturktur S.** (2014), "Role of Numerical Errors in the Strongly Coupled Models," IMAC XXXII A Conference and Exposition on Structural Dynamics, February 3-6, Orlando, Florida, USA.

**Atamturktur S.** and Stevens G.\* (2014) "Validation of Strongly Coupled Models: A Framework for Resource Allocation," IMAC XXXII A Conference and Exposition on Structural Dynamics, February 3-6, Orlando, FL, USA.

Stevens G.\*, **Atamturktur S.**, and Hegenderfer J.\* (2014), "Improving Model Predictions through Partitioned Analysis," IMAC XXXII A Conference and Exposition on Structural Dynamics, February 3-6, Orlando, FL, USA.

Farajpour, I., Stevens G.\*, **Atamturktur S.**, Lebensohn R., and Kaschner G. (2014), "Experiment-Based Validation and Uncertainty Quantification of Multi-Scale Plasticity Models," IMAC XXXII A Conference and Exposition on Structural Dynamics, February 3-6, Orlando, FL, USA.

- Yazdekhosti S.\*, Piratla K. R., Khan A., and **Atamturktur S.** (2014), “Analysis of Factors Influencing the Selection of Water Main Rehabilitation Methods,” NASTT No Dig 2014, Orlando, FL.
- Atamturktur S.**, Prabhu S.\*, and Dorrance R. (2013), “Structural Assessment of Fort Sumter Masonry Coastal Fortification Subject to Foundation Settlements,” *Proceedings of the 31st Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Orange County, California, USA.
- Egeberg M.\*, **Atamturktur S.**, and Hemez F. (2013), “Defining Coverage of a Domain using a Modified Nearest-Neighbor Metric,” *Proceedings of the 31st Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Orange County, California, USA.
- Farajpour I.\* and **Atamturktur S.** (2013), “Ranking Constituents of Coupled Models for Improved Performance,” *Proceedings of the 31st Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Orange County, California, USA.
- Liu Z.\*, **Atamturktur S.**, and Hsein J. (2013), “Robust Design Optimization of Steel Moment Resisting Frame Under Ground Motion Uncertainty,” *Proceedings of the 31st Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Orange County, California, USA.
- Van Buren K.\*, **Atamturktur S.**, and Hemez F. (2013), “Simulating the Dynamics of the CX-100 Wind Turbine Blade: Model Selection using a Robustness Criterion,” *Proceedings of the 31st Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Orange County, California, USA.
- Dalton S.\*, Farajpour I.\*, Juang H., and **Atamturktur S.** (2012), “Robust Design Optimization to Account for Uncertainty in the Structural Design Process,” *Proceedings of the 30th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Jacksonville, Florida, USA.
- Hegenderfer J.\*, Gillen A.\*, and **Atamturktur S.** (2012), “Damage Detection in Steel Structures using Bayesian Calibration Techniques,” *Proceedings of the 30th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Jacksonville, Florida, USA.
- Van Buren K.\*, Hemez F., and **Atamturktur S.** (2012), “Demonstrating Predictive Capability of Validated Wind Turbine Blade Models,” *Proceedings of the 30th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVIII)*, Jacksonville, Florida, USA.
- Atamturktur S.**, Hemez F., and Unal. C. (2011), “A Forecasting Metric for Predictive Modeling,” *Proceedings of the 29th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Jacksonville, Florida, USA.
- Prabhu S.\*, Supler J.\*, and **Atamturktur S.** (2011), “Feature Assimilation in Structural Health Monitoring Applications,” *Proceedings of the 29th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Jacksonville, Florida, USA.

- Van Buren K.\* and **Atamturktur S.** (2011), "Model form Error of Alternative Modeling Strategies: Shell Type Wind Turbine Blades," *Proceedings of the 29th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Jacksonville, Florida, USA.
- Atamturktur S.** (2010), "Defect Detection in Concrete Members," *Proceedings of the 28th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Jacksonville, Florida, USA.
- Hemez F. and **Atamturktur S.** (2010), "Dangers of Sparse Sampling," *Proceedings of the 28th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Jacksonville, Florida, USA.
- Hemez F., **Atamturktur S.**, and Unal C. (2010), "Demonstrating the Improvement of Predictive Maturity of a Computational Model," AIAA Non-Deterministic Approaches Conference, Orlando, Florida, USA.
- Atamturktur S.**, Hemez F., Williams B., and Unal C. (2009), "A Discussion on Predictive Maturity using Multivariate and Functional Output," *Proceedings of the 27th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Orlando, Florida, USA.
- Hemez F., **Atamturktur S.**, and Unal C. (2009), "Defining Predictive Maturity for Validated Numerical Simulations," *Proceedings of the 27th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Orlando, Florida, USA.
- Atamturktur S.** (2009), "Validation and Verification under Uncertainty applied to Finite Element Models of Historic Masonry Monuments," *Proceedings of the 27th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVII)*, Orlando, Florida, USA.
- Atamturktur S.**, Pavic A., and Reynolds P. (2008), "Sensitivity of Modal Parameters of Historic Monuments to Geometric Distortion," *Proceedings of the 26th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXVI)*, Orlando, Florida, USA.
- Atamturktur S.**, Fanning P., and Boothby T. (2007), "Traditional and Operational Modal Testing of the Washington National Cathedral," *Proceedings of the International Operational Modal Analysis Conference*, Copenhagen, Denmark.
- Atamturktur S.**, Hanagan L., and Boothby T. (2007), "Extension of Large Scale Modal Analysis Techniques to Historic Masonry Vaults," *Proceedings of the 25th Society of Experimental Mechanics (SEM) International Modal Analysis Conference (IMAC-XXV)*, Orlando, Florida, USA.
- Boothby T., **Atamturktur S.**, and Hanagan L. (2006), "Modal Analysis Methods for Validation of Vaulted Stone Masonry Models," *Proceedings of the 2006 Architectural Engineering Conference*, Omaha, Nebraska, USA.

## Long Abstracts

6 long abstracts accepted

\* indicates publications with Atamturktur's students

\*\* indicates other graduate students

**Atamturktur S.**, Stevens G.N.\*, Brown A., Williams B., Unal C., Lebensohn R., and Kaschner G. (2016), "State Aware Calibration of Computer Models," American Society of Mechanical Engineers (ASME) Verification and Validation Symposium, Las Vegas, Nevada, USA.

**Atamturktur S.**, Stevens G.N.\*, and Roche G.M.\* (2014), "Framework for Experiment-Based Verification and Validation of Strongly Coupled Numerical Models," American Society of Mechanical Engineers (ASME) Verification and Validation Symposium, Las Vegas, Nevada, USA.

Stevens G.N.\*, **Atamturktur S.**, Lebensohn R., and Kaschner G. (2014), "Bias-Corrected Partitioned Analysis of Multi-Scale Plasticity Models," American Society of Mechanical Engineers (ASME) Verification and Validation Symposium, Las Vegas, Nevada, USA.

Stevens G., **Atamturktur S.**, Lebensohn R., and Kaschner, G. (2013), "Experiment-Based Validation and Uncertainty Quantification of Multi-Scale Plasticity Models," ANS Winter Meeting, November 10-14, Washington, D.C., USA.

Van Buren K.L.\*, Hemez F.M., and **Atamturktur S.** (2012), "Simulating the Dynamics of the CX-100 Wind Turbine Blade: Part II, Model Selection using a Robustness Criterion," American Society of Mechanical Engineers (ASME) Verification and Validation Symposium, Las Vegas, Nevada, USA.

Van Buren K.L.\*, Mollineaux M.G.\*\*, Hemez F.M., and **Atamturktur S.** (2012), "Simulating the Dynamics of the CX-100 Wind Turbine Blade: Part I, Model Development, Verification and Validation," American Society of Mechanical Engineers (ASME) Verification and Validation Symposium, Las Vegas, Nevada, USA.

## Research Reports

16 reports submitted

\* indicates publications with Atamturktur's students

\*\* indicates other graduate students

**Atamturktur S.** and Prabhu S.\* (2014), "Structural Analysis of Fort Sumter," Report prepared for the US Department of the Interior, National Park Service.

Kyser D.\*\*, Prabhu S.\*, Nadarajah R., Messier P., and **Atamturktur S.** (2014), "Hydrographic Survey, Wave Load Analysis and Foundation Analysis of Fort Sumter," Report prepared for the US Department of the Interior, National Park Service.

**Atamturktur S.**, Dutta M.\*, and Prabhu S.\* (2013), "Wave Forces Acting on Foundation of Fort Sumter," Report prepared for the US Department of the Interior, National Park Service.



- Atamturktur S.** and Prabhu S\* (2013), “The Structural Assessment of Subterranean Cisterns,” Report prepared for the US Department of the Interior, National Park Service.
- Mollineaux M.\*\*, Van Buren K.\* , Hemez F., and **Atamturktur S.** (2011), “Simulating the Dynamics of Wind Turbine Blades: Part I, Model Development and Verification,” Los Alamos Technical Report, LA-UR-11-4996.
- Van Buren K.\* , Mollineaux M.\*\*, Hemez F., and **Atamturktur S.** (2011), “Simulating the Dynamics of Wind Turbine Blades: Part II, Model Validation & Uncertainty Quantification,” Los Alamos Technical Report, LA-UR-11-4997.
- Atamturktur S.**, Hemez F.M., Tomé C., Williams B., and Unal C. (2010), “A Forecasting Metric for Predictive Modeling in Science and Engineering,” Los Alamos Technical Report, LA-UR-10-03699.
- Atamturktur S.**, Hemez F.M., and Unal C. (2010), “Calibration under Uncertainty for Finite Element Models of Masonry,” Los Alamos Technical Report, LA-14414.
- Atamturktur S.**, Lebensohn R., Tomé C., Higdon D., Williams B., Hemez F.M., and Unal C. (2009), “Predictive Maturity: A Quantitative Metric to Optimize Complex Simulations via Systematic Experimental Validation,” Los Alamos Technical Report, LA-UR-09-07226.
- Hemez F. and **Atamturktur S.** (2009), “The Dangers of Sparse Sampling for Uncertainty Propagation and Model Calibration,” Los Alamos Technical Report, LA-UR-09-03917.
- Hemez F. and **Atamturktur S.** (2009), “Prediction with Quantified Uncertainty of Temperature and Rate Dependent Material Behavior,” Los Alamos Technical Report, LA-UR-08-6741.
- Atamturktur S.**, Hemez F., Williams B., and Unal C. (2008), “Predictive Maturity using Multivariate and Functional Output,” Los Alamos Technical Report, LA-UR-08-07313.
- Hemez F., **Atamturktur S.**, and Unal C. (2008), "Defining Predictive Maturity for Validated Numerical Simulations," Los Alamos Technical Report, LA-UR-08-06741.
- Boothby T., **Atamturktur S.**, and Erdogmus E. (2006), “Manual for the Assessment of Load Bearing Unreinforced Masonry Structures,” prepared for the US Department of the Interior, National Park Service, and National Center for Preservation Technology and Training.
- Boothby T., Parfitt K., and **Atamturktur S.** (2005), “Condition Review and Investigation of Moisture Intrusion of the Exterior Bastion Walls at Historic Ft. Pitt Museum,” prepared for The Pennsylvania Historic and Museum Commission.

### **Doctoral Dissertation**

- “Calibration under Uncertainty for Finite Element Models of Masonry Monuments,” Doctoral Dissertation in Civil and Environmental Engineering, The Pennsylvania State University, advised by Drs. Jeffrey Laman and Thomas E. Boothby, 2009.

### **Masters Thesis**

“Structural assessment of Guastavino domes, Master Thesis in Architectural Engineering,” The Pennsylvania State University, advised by Dr. Thomas E. Boothby, 2006.

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### **HONORS AND AWARDS**

#### **Professional Awards**

Outstanding Woman Faculty Award, Clemson University President’s Commission on Women, 2016.

Murray Stokely Award for Excellence in Teaching, College of Engineering and Science, Clemson University, 2014.

Outstanding Teacher Award, Clemson University Chapter of Chi Epsilon Honors Society, 2012.

Outstanding Teacher Award, Clemson University Chapter of Chi Epsilon Honors Society, 2011.

LAAP Outstanding Contribution Award, Los Alamos National Laboratory, 2009.

Pennsylvania Concrete Masonry Association Sponsorship & Northeast Cement Shippers Association Sponsorship, University Professor's Masonry Workshop, 2008.

Women in Engineering Program, travel grants to participate at 24th and 26th International Modal Analysis Conference, 2006 and 2008.

Dominick J. Demichele Scholarship Award, 25th International Modal Analyses Conference, 2007.

James L. Noland Student Fellowship Award, 10th North American Masonry Conference, 2007.

World University Network Fellowship Award, Visiting Researcher at University of Sheffield, UK, 2007.

#### **Best Paper Nominations and Awards**

Nominated for the Best Paper Award, Model Validation and Uncertainty Quantification Technical Group, 30th International Modal Analysis Conference, 2016.

Best Paper Award, Model Validation and Uncertainty Quantification Technical Group, 29th International Modal Analysis Conference, 2015.

Nominated for the Best Paper Award, Model Validation and Uncertainty Quantification Technical Group, 28th International Modal Analysis Conference, 2014.

Nominated for the ASCE Middlebrooks/Croes/Norman Award, the paper titled “Bayesian Updating of Soil Parameters for Braced Excavations using Field Observations,” Journal of Geotechnical and Geoenvironmental Engineering, 2013.

Nominated for the Best Paper Award, Model Validation and Uncertainty Quantification Technical Group, the paper titled “Defining Coverage of a Domain using a Modified Nearest-Neighbor Metric,” 28th International Modal Analysis Conference, 2013.

Most Outstanding Paper Award, Taiwan Geotechnical Society, 2012.

Nominated for the ASCE Middlebrooks/Croes/Norman Award, the paper titled “Simplified Approach for Reliability-Based Design Against Basal-Heave Failure in Braced Excavations Considering Spatial Effects,” Journal of Geotechnical and Geoenvironmental Engineering, 2012.

Best Paper Award, Model Validation and Uncertainty Quantification Technical Group, 28th International Modal Analysis Conference, 2010.

Best Paper Award, College of Engineering Research Symposium, The Pennsylvania State University, 2009.

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## SPONSORED RESEARCH

### Active Projects

National Science Foundation (NSF), Professional Formation of Engineers: Revolutionizing Engineering Departments (IUSE/PFE:RED), \$1,999,289, (2017-2022), “Clemson University: Learning Teams and Innovation Ventures for Adaptable Training in Engineering (CULTIVATE),” (Co-PI & lead author: **Atamturktur**; Co-PIs: Sarasua, Marion, Martin, and Benson).

National Science Foundation (NSF), Broadening Participation in Engineering, \$49,711, (2017-2018), “Broadening Participation in Engineering: Workshop on Reducing Attrition in Precalculus Pathways,” (PI: Gallagher; Co-PIs: **Atamturktur**, Frady, and Acker).

National Science Foundation (NSF), Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE), \$3,405,472, (2016-2021), “Transforming the Institution Towards Gender Equity through Retention and Support,” (PI: Jones; Co-PI & Director: **Atamturktur**; Co-PIs: Granberg, Rosopa, and Winslow).

National Science Foundation (NSF), National Research Traineeship, Data-Enabled Science and Engineering (NRT:DESE), \$2,989,899, (2016-2021), “Preparing Resilient and Operationally Adaptive Communities through an Interdisciplinary, Venture-Based Education (PROACTIVE),” (PI: **Atamturktur**, Co-PIs: Bottum, Khan, Martin, and Moysey).

National Science Foundation (NSF), Design of Engineering Material Systems (DEMS), \$427,724, (2016-2019), “Simulation-Based Design of Polymer Nanocomposites for Structural Applications,” (PI: **Atamturktur**; Co-PIs: Kitchens and Brown).

Department of Education (DoEd), Graduate Assistance in Areas of National Need (GAANN),

\$1,312,500, (2016-2020), “Model Validation Analytics in Support of High-Consequence Decision Making in Civil and Environmental Engineering,” (PI: **Atamturktur**; Co-PI: N/A).

Department of the Interior (DoI), National Center for Preservation Technology and Training (NCPTT), \$40,000, (2016-2017), “Foresight for Disaster Management: Infrastructure Risk Index Analysis,” (PI: **Atamturktur**; Co-PI: N/A).

National Concrete Masonry Association (NCMA), \$136,966, (2015-2017), “Appraising and Optimizing the Thermal and Structural Characteristics of Concrete Masonry Units: An Integrated Approach for Experimental Testing and Numerical Modeling,” (PI: **Atamturktur**; Co-PI: Sanders).

National Science Foundation (NSF), Cyber-Innovation for Sustainability Science and Engineering (CyberSEES), \$396,011, (2015-2017), “Enabling Sustainable Water Supplies through Self-Powered Sensor-Based Monitoring,” (PI: Piratla; **Co-PIs: Atamturktur**, Khan, and Sorber).

### **Successfully Completed Projects**

American Insurance Group (AIG), \$137,171, (2016-2017), “Framework for Downtime Loss Modeling for Industrial Facilities,” (PI: **Atamturktur**).

National Concrete Masonry Association (NCMA), \$104,000, (2014-2016), “An Integrated Numerical and Experimental Study: Structural Behavior of Dry-Stacked Systems,” (PI: **Atamturktur**, Co-PI: N/A).

Vulcraft, South Carolina, \$24,205, (2013-2015), “Debris Impact Resistance of Steel Roof Decks,” (PI: **Atamturktur**; Co-PI: Ross).

National Science Foundation (NSF), \$394,666, (2012-2016), “Transforming Robust Design Concept into a Novel Geotechnical Design Tool,” (PI: Juang; **Co-PI: Atamturktur**).

Department of Education (DoEd), Graduate Assistance in Areas of National Need (GAANN), \$1,112,500, (2012-2016), “Graduate Training in Engineering and Managing Resilient and Sustainable Infrastructure,” (PI: **Atamturktur**; Co-PI: N/A).

Department of the Interior (DoI), National Park Services (NPS), \$172,000, (2012-2014), “Structural Integrity Assessments at Fort Sumter National Monument (FSNM): Phase II –CESU,” (PI: **Atamturktur**; Co-PI: N/A).

Department of the Interior (DoI), National Park Services (NPS), \$270,000, (2011-2014), “Structural Integrity Assessments at Fort Sumter National Monument (FSNM): Phase I –CESU,” (PI: **Atamturktur**; Co-PI: N/A).

Department of the Interior (DoI), National Center for Preservation Technology and Training (NCPTT), \$50,000, (2011-2013), “Structural Prognosis for The Effective Management of Nation’s Cultural Heritage,” (PI: **Atamturktur**; Co-PI: N/A).

South Carolina Department of Transportation (SC DOT), \$458,904, (2010-2014), “Real Time

Measurement of Scour Depths around Bridge Piers and Abutments,” (PI: Khan; Co-PI: **Atamturktur**).

Department of Energy (DoE), Nuclear Energy University Programs (NEUP), ~~\$614,690~~, (2010-2014), “Predictive Maturity of Multi-Scale Simulation Models for Fuel Performance,” (PI: **Atamturktur**; Co-PI: N/A).

Los Alamos National Laboratory (LANL), ~~\$78,757~~, (2010-2011), “The Influence of Adding Physics on the Predictive Maturity of a Code,” (PI: **Atamturktur**; Co-PI: N/A).

Department of the Interior (DoI), National Center for Preservation Technology and Training (NCPTT), ~~\$50,000~~, (2010-2011), “Structural Health Monitoring of Nation’s Cultural Heritage,” (PI: **Atamturktur**; Co-PI: N/A).

4SE, ~~\$6,000~~, (2010), “Effect of Member Failure on Structural Stability Applied to Fort Jefferson, FL,” (PI: **Atamturktur**; Co-PI: N/A).

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## OTHER SPONSORED ACTIVITY

Masonry Structural Design Competition for Civil Engineering Students, National Concrete Masonry Association (NCMA), \$13,000, (2014-2015), (PI: **Atamturktur**; Co-PI: N/A).

Structural Health Monitoring of Civil Infrastructure, Creative Inquiry Grant, Clemson University, \$13,500, (over 2010-2014), (PI: **Atamturktur**; Co-PI: N/A).

REU: Transforming Robust Design Concept into a Novel Geotechnical Design Tool, National Science Foundation, \$12,000, (2013-2014), (PI: Juang; Co-PI: **Atamturktur**).

Masonry Structural Design Competition for Civil Engineering Students, National Concrete Masonry Association (NCMA), \$13,000, (2013-2014), (PI: **Atamturktur**; Co-PI: N/A).

Experiences in Undergraduate Research, Exploration and Knowledge Advancement (EUREKA!), \$1400, (2010 & 2011), (PI: **Atamturktur**; Co-PI: N/A).

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## INVITED PRESENTATIONS

### ***International Presentations***

*8 invited international trips funded by the host institution*

“Experiment-based Validation and Uncertainty Quantification of Partitioned Models: Improving Predictive Capability of Multi-Scale Plasticity Models,” Bauhaus-Universität Weimar, Institut für Strukturmechanik, Weimar, **Germany**, September 2016.

- “Model Calibration Under Uncertainty,” Bauhaus-Universität Weimar, Institut für Strukturmechanik, Weimar, **Germany**, November 2015.
- “State-Aware Calibration of Computer Models of Engineering Systems,” Scientific Advisory Board Member, International Conference on Uncertainty in Mechanical Engineering (ICUME), Darmstadt, **Germany**, November 2015. (delivered keynote speech)
- “Experiment-based Validation of Computer Models: Historic Masonry Monuments,” Workshop on Seismic Risk of Historical Structures, Istanbul Technical University, Istanbul, **Turkey**, November 2014.
- “Considering Fidelity and Robustness in Engineering Analysis and Design: A Multi-Objective Optimization-Based Approach,” Workshop on Model-Based Design, Validation, and Monitoring of Structures Under Severe Uncertainty, Université De Franche-Comte, Besançon, **France**, June 2014.
- “Multi-objective Model Calibration of Complex Numerical Models Considering Fidelity and Robustness,” Workshop on Model-based Design, Validation, and Monitoring of Structures under Severe Uncertainty, Université De Franche-Comte, Besançon, **France**, June 2014.
- Three different short-courses on “Error and Uncertainty Analysis of Inexact and Imprecise Computer Models,” Université De Franche-Comte, Besançon, France, June-August 2013.
- “Validation and Uncertainty Quantification of Simulation Models of Masonry Systems,” École Polytechnique Fédérale de Lausanne, Lausanne, **Switzerland**, July 2013.

### **Selected Experiences in the United States**

- “Verification, Validation and Uncertainty Quantification of Simulation Models,” The Cyberinfrastructure Expo, Clemson, SC, September 2014. (invited, delivered keynote speech)
- “Integrated Numerical and Experimental Study: Structural Behavior of Dry-Stacked Systems,” CCMA Summer Meeting, Charleston, SC, July 2014. (invited)
- “Verification, Validation and Uncertainty Quantification of Simulation Models,” Midas Technical Webinar, March 2012. (invited)
- “Prediction, Calibration, and Validation Concepts through Statistical Inference,” Department of Civil and Environmental Engineering, University of South Carolina, Columbia, SC, October 2010. (invited)
- “Predictive Maturity: A Quantitative Metric for Optimizing Complex Simulations via Systematic Experimental Validation,” Los Alamos National Laboratory IS&T Symposium, Los Alamos National Laboratory, Los Alamos, NM, August 2009. (invited)
- “Predictive Maturity of Computer Models using Functional and Multivariate Output”, Los Alamos National Laboratory Symposium, Los Alamos National Laboratory, Los Alamos, NM, August 2008. (invited)



## PROFESSIONAL ACTIVITIES

### Participation in Technical Committees

Technical editor of SAGE, *Experimental Techniques*, 2018 to present.

Scientific Advisory Board Member, International Conference on Uncertainty in Mechanical Engineering (ICUME), Darmstadt, Germany, 2018.

Advisory Board Member, Future Conference Planning, Society of Experimental Mechanics, 2018 to present.

Associate editor of American Society of Mechanical Engineering (ASME), *Journal of Verification and Validation*, 2016 to present.

Executive Board Member, Member at Large, Society of Experimental Mechanics, 2016 to present.

Scientific Advisory Board Member, International Conference on Uncertainty in Mechanical Engineering (ICUME), Darmstadt, Germany, 2015.

Elected Member, American Society of Mechanical Engineers Verification and Validation (V&V10) Technical Committee, 2014 to present.

Advisory Board Member, SIGMA Journal of Engineering and Natural Sciences, 2013 to present.

Chair, Model Validation and Uncertainty Quantification Technical Division, Society of Experimental Mechanics, 2013 to present.

Corresponding Member, Masonry Standards Joint Committee, Flexure, Axial, and Shear subcommittee, 2013 to present.

Corresponding Member, Masonry Standards Joint Committee, General Requirements subcommittee, 2013 to present.

Member, Dry-Stack Masonry Technical Division, the International Masonry Society, 2013 to present.

Advisory Board member, BUILT, *International Journal of Building, Urban, Interior and Landscape Technology*, 2011 to present.

Vice-chair, Model Validation and Uncertainty Quantification Technical Division, Society of Experimental Mechanics, 2011-2013.

Member, Existing Masonry Technical Division, The Masonry Society, 2009 to present.

Secretary, Model Validation and Uncertainty Quantification Technical Division, Society of Experimental Mechanics, 2009-2011.

Member, Civil Structures Testing Technical Division, Society of Experimental Mechanics, 2007 to present.

### **Chaired and Organized Sessions at Technical Conferences**

- Session Chair, Verification Methods: Session 2, ASME Verification and Validation Conference, Las Vegas, NV, 2016.
- Session Coordinator, ASME ASCE Resiliency of Urban Tunnels Workshop, Washington D.C., 2016.
- Session Organizer and Chair, Resource Allocation in Model Validation and Uncertainty Quantification, 33rd International Modal Analysis Conference, Orlando, FL, 2015.
- Session Chair, Experimental Techniques for Civil Structures, 32nd International Modal Analysis Conference, Orlando, FL, 2014.
- Session Chair, Modal Parameter Identification, 32nd International Modal Analysis Conference, Orlando, FL, 2014.
- Session Chair, Topics in Verification and Validation: Part 2, ASME Verification and Validation Conference, Las Vegas, NV, 2014.
- Session Chair, Validation Methods: Part 2, ASME Verification and Validation Conference, Las Vegas, NV, 2014.
- Session Organizer and Chair, Uncertainty Quantification & Model Validation, 32nd International Modal Analysis Conference, Orlando, FL, 2014.
- Session Chair, Structural Modeling for Civil Structures II, 31st International Modal Analysis Conference, Garden Grove, CA, 2013.
- Session Chair, Experimental Techniques and Modeling of Civil Structures, 30th International Modal Analysis Conference, Jacksonville, FL, 2012.
- Session Organizer and Chair, Model Validation & Uncertainty Quantification, 29th International Modal Analysis Conference, Jacksonville, FL, 2011.
- Session Chair, Damage Detection and Modeling Civil Structures, 28th International Modal Analysis Conference, Jacksonville, FL, 2010.
- Session Organizer and Chair for two sessions: Model Validation & Uncertainty Quantification I & II, 28th International Modal Analysis Conference, Jacksonville, FL, 2010.
- Session Chair, Model Validation & Uncertainty Quantification, 27th International Modal Analysis Conference, Orlando, FL, 2009.

### **Journals Served as Reviewer**

- Earthquake Engineering and Engineering Vibration, 2016 to present.
- Expert Systems with Applications, 2016 to present.
- Journal of Process Mechanical Engineering, 2016 to present.
- Mechanics Based Design of Structures and Machines, An International Journal, 2016 to present.

Structure and Infrastructure Engineering, 2016 to present.

ACI Structural Journal, 2015 to present.

Advances in Masonry Materials and Structures: Experimental & Numerical Modelling Aspects, 2015 to present.

Applied Mathematical Modelling, 2015 to present.

ASME Journal of Verification, Validation and Uncertainty Quantification, 2015 to present.

BUILT, 2015 to present.

Computer-Aided Civil and Infrastructure Engineering, 2015 to present.

Computers and Industrial Engineering, 2015 to present.

Flow Measurement and Instrumentation, 2015 to present.

Journal of Automation in Construction, 2015 to present.

Mechanical Systems and Signal Processing, 2015 to present.

Nondestructive Testing and Evaluation, 2015 to present.

The Open Construction and Building Technology Journal, 2015 to present.

Sensors, 2015 to present.

Sigma Journal of Engineering and Natural Sciences, 2015 to present.

Structures and Buildings, 2015 to present.

Sustainability, 2015 to present.

Buildings, 2014 to present.

Computers & Industrial Engineering, 2014 to present.

Journal of Sound and Vibration, 2014 to present.

Multidiscipline Modeling in Materials and Structures, 2014 to present.

Structural and Multi-Disciplinary Optimization, 2014 to present.

Structural Engineering and Mechanics, An International Journal, 2014 to present.

ASCE Journal of Structural Engineering, 2013 to present.

Journal of Earthquake Engineering, 2013 to present.

Mechanics of Advanced Materials and Structures, 2013 to present.

Review of Applied Physics, 2013 to present.

ASCE Journal of Computing in Civil Engineering, 2012 to present.

International Journal of Building, Urban, Interior and Landscape Technology, 2012 to present.

Journal of the International Society for the Prevention and Mitigation of Natural Hazards, 2012 to present.

Journal of Vibration and Control, 2012 to present.

ICE Forensic Engineering, 2011 to present.  
International Journal for Uncertainty Quantification, 2011 to present.  
The Structural Design of Tall and Special Buildings, 2011 to present.  
ICE Buildings and Structures, 2010 to present.  
ASCE Journal of Architectural Engineering, 2009 to present.  
ASCE Journal of Performance of Constructed Facilities, 2009 to present.  
ASTM Journal of Testing and Evaluation, 2009 to present.  
Engineering Structures, 2009 to present.  
The Masonry Society Journal, 2009 to present.  
Experimental Techniques, 2007 to present.

### **Funding Agencies Served as Reviewer**

Swiss National Science Foundation, 2016 to present.  
Chilean National Science and Technology Commission, 2015 to present.  
U.S. Department of Energy, The Nuclear Energy University Programs, 2013 to present.  
The Leverhulme Trust, 2013.  
Davidson Fellows Program, 2012 to present.  
National Science Foundation, 2011 to present.  
METTRANS Transportation Center, 2011.

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### **MEMBERSHIPS**

Member, American Society of Mechanical Engineers, ASCE, 2014 to present.  
Member, American Concrete Institute, 2012 to present.  
Member, The American Institute of Aeronautics and Astronautics, AIAA, 2009 to present.  
Member, The Masonry Society, TMS, 2006 to present.  
Member, American Society of Civil Engineers, ASCE, 2006 to present.  
Member, Society of Experimental Mechanics, SEM, 2005 to present.

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### **UNIVERSITY AND PUBLIC SERVICE**

### **Departmental Committees**

Chair, Faculty Search Committee in the department of Civil Engineering (2016-2017)

Chair, Advisory Committee in the department of Civil Engineering (2015-17)

Member, Advisory Committee in the department of Civil Engineering (2013-2015)

Member, Graduate Program Committee in the department of Civil Engineering (2011-present)

Member of Faculty Search Committees (three times) in the department of Civil Engineering (2011-2012)

Member, Diversity and Outreach Committee in the department of Civil Engineering (2010-2013 and 2016-2017)

Member, Scholarships and Awards Committee in the department of Civil Engineering (2010-2013)

### **College-Level Committees**

Member, Academic Grievance Committee (2016 to present)

Member, Dean's Advisory Council (2013 to present)

Member, Department Chair Search Committee (2013)

### **University-Level Committees**

Member, The Clemson University Computational Advisory Team (2015-2017)

Member, Associate Provost Search Committee (2015)

Member, University Awards Committee (2014 to present)

Member, University Assessment Committee (2011-2014)

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## **TEACHING**

CE 2990/3990/4990, Creative Inquiry on Structural Health Monitoring

CE 3010, Structural Analysis

CE 4010/6010, Matrix Structural Analysis

CE 4040/6040, Masonry Structural Design

CE 8060, Structural Dynamics

CE 8090, Structural Health Monitoring

EEES 8930, Critical, Resilient Interdependent Infrastructure Systems

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## GRADUATE STUDENT ADVISING

### *Faculty Advisor for Postdoctoral Fellows*

Saurabh Prabhu (Ph.D.), “Framework for Downtime Loss Modeling for Industrial Facilities” (2015-2017).

Karma Yonten (Ph.D.), “Prioritization of Code Development Efforts in Resource Allocation to Achieve Improved Predictive Maturity of Multi-Scale and Multi-Physics Modeling of Fuel Performance,” (2011-2012).

Murat Hamutcuoglu (Ph.D.), “Experiment Prioritization: Resource Allocation to Achieve Improved Predictive Maturity for Multi-Scale and Multi-Physics Modeling of Fuel Performance,” (2010-2011).

### *Faculty Advisor for Doctoral Graduates*

Xiaoyu Hu (Ph.D. student), “Damage Detection in Steel Structures using Bayesian Calibration Techniques,” (December 2017).

Sepideh Yazdekhashti (Ph.D.), “Feasibility Evaluation of a Vibration-Based Leak Detection Technique for Sustainable Water Distribution System Monitoring,” Co-Advised with Drs. K.R. Piratla and A. Khan, (August 2017).

Garrison Stevens (Ph.D.), “Experiment-Based Validation and Uncertainty Quantification of Partitioned Models: Improving Predictive Capability of Multi-Scale Plasticity Models,” (August 2016).

Jie Lu (Ph.D.), “Robust Modeling Framework for Rehabilitating Transportation Infrastructure under Uncertainty,” Co-Advised with Dr. H. Huang, (December 2015).

Saurabh Prabhu (Ph.D.), “Data Assimilation Techniques for Structural Health Monitoring Applications as Applied to Masonry Monumental Structures,” (December 2015).

Wenping Gong (Ph.D.), “Robust Geotechnical Design of Drilled Shafts,” Co-Advised with Dr. H. Juang, (December 2014).

Ismail Farajpour (Ph.D.), “Optimization-Based Strong Coupling of Multiple Single-Solver Models,” (December 2013).

Lei Wang (Ph.D.), “Robust Design of Braced Excavation in Clay,” Co-Advised with Dr. H. Juang, (December 2013).

Zhifeng Luo (Ph.D.), “Robust Performance-based Structural Design,” Co-Advised with Dr. H. Juang, (August 2013).

Murray Fisher (Ph.D.), “Vibration Based Structural Health Monitoring of Bridge Pier and Abutment Scour,” Co-Advised with Dr. A. Khan, (December 2012).



Kendra Van Buren (Ph.D.), “Assuring Robustness against Uncertainty in Predictive Modeling of Wind Turbine Blades,” (December 2012).

Josh Hegenderfer (Ph.D.), “Resource Allocation Framework: Validation of Numerical Models of Complex Engineering Systems against Physical Experiments,” (August 2012).

Zhe Luo (Ph.D.), “Simplified Random-Field Framework for Reliability-Based Design against Basal-Heave Failure in A Braced Excavation in Clay,” Co-Advised with Dr. H. Juang, (December 2011).

### **Faculty Advisor for Masters Graduates**

Aditya Kamath (M.S.), “Foresight for Disaster Management: Infrastructure Risk Index Analysis,” (December 2017).

Robert Roper (M.S.), “Impact Resistance of Steel Decks,” (December 2014).

Garrison Stevens (M.S.), “Stochastic Wavenumber Estimation: Damage Detection through Simulated Guided Lamb Waves,” (December 2014).

Matthew Egeberg (M.S.), “Optimal Design of Validation Experiments for Calibration and Validation of Complex Numerical Models,” (August 2014).

Parker Shields (M.S.), “Role of Robustness to Uncertainty and Fidelity to Data in Experiment-based Validation of Numerical Models,” (December 2013).

Md. Chowdhury (M.S.) “Vibration Based Structural Health Monitoring of Bridge Pier and Abutment Scour,” Co-Advised with Dr. A. Khan, (August 2013).

Lei Wang (M.S.), “Probabilistic Back Analysis of Geotechnical Systems,” Co-Advised with Dr. H. Juang, (August 2013).

Ashley Haydock (M.S.), “Noise-Insensitive Prognostic Evaluation of Historic Masonry Structures,” (May 2013).

Tun Li (M.S.), “Load Carrying Capacity Assessment of a Masonry Dome,” (August 2012).

Sarah Dalton (M.S.), “Robust Structural Health Monitoring for Infrastructure Management,” Co-Advised with Dr. H. Juang, (December 2011).

Saurabh Prabhu (M.S.), “Structural Health Monitoring of Historic Masonry Monuments,” (August 2011).

Kendra Van Buren (M.S.) “Structural Health Monitoring of Shell Type Wind Turbine Blades,” (May 2011).

### **Faculty Advisor for Current Doctoral Students**

Marcos Martinez (Ph.D. Student), “An Integrated Numerical and Experimental Study: Structural Behavior of Dry-Stacked Systems,” (Expected Graduation Date: May 2018).

Carl Ehrett (Ph.D. Student in the Mathematical Sciences department), “TBD,” Co-advised with Dr. A. Brown, (Expected Graduation Date: December 2019).

William Robert Locke (Ph.D. Student), “TBD: Health Monitoring of Transportation Infrastructure,” (Expected Graduation Date: May 2020).

Justin Sybrandt (Ph.D. Student in the Computer Science department), “TBD,” Co-advised with Dr. I. Safro, (Expected Graduation Date: May 2020).

Andre Apostol (Ph.D. Student), “TBD: Interdependent Infrastructure Systems,” (Expected Graduation Date: December 2021).

Evan Chodora (Ph.D. Student), “TBD: Design of Engineering Systems,” (Expected Graduation Date: December 2021).

Lee Redfearn (Ph.D. Student in the Mathematical Sciences department), “TBD,” Co-advised with Dr. T. T. Khan, (Expected Graduation Date: December 2021).

Christopher Gropp (Ph.D. Student), “TBD,” Co-advised with Dr. A. Apon, (Expected Graduation Date: ).

Stephani Mokalled (Ph.D. Student), “TBD,” Co-advised with Dr. C. McMahan, (Expected Graduation Date: ).

Caleb Arp (Ph.D. Student), “TBD,” Co-advised with Dr. C. Kitchens, (Expected Graduation Date: )

### **Faculty Advisor for Current Masters Students**

N/A

### **Faculty Advisor for Visiting Students (with thesis)**

Baptiste Devaux, (Ph.D. candidate), Université De Franche-Comte, Besançon, France (January-May 2014)

### **Committee Member for Defending Graduate Students**

Farbod Akhavan Niaki, Ph.D., advised by Dr. L. Mears (August 2016)

Abby Liu, Ph.D., advised by Dr. W. Pang (August 2014)

Michael Willis, M.S., advised by Dr. B. Ross (May 2014)

Mengyu Yang, M.S., advised by Dr. W. Pang (August 2013)

Josh Caron, M.S., advised by Dr. W. Pang (December 2012)

Liam Sullivan, M.S., advised by Dr. B. Nielson (May 2010)