Keegan J. Moore

(he/him/his)
April 5, 2024

Assistant Professor
College of Engineering Teaching Fellow
Department of Mechanical and Materials Engineering
University of Nebraska–Lincoln

Office: W330 Nebraska Hall
Lab: D209B ERC
Lincoln, NE, 68588-0526
(330) 635-8426 | kmoore@unl.edu

Education

2018	Ph.D. in Mechanical Engineering, University of Illinois at Urbana-Champaign, Urbana, IL Dissertation: "Data-Driven System Identification of Strongly Nonlinear Modal Interactions and Model Updating of Nonlinear Dynamical Systems" Advisors: Alexander F. Vakakis, Lawrence A. Bergman, D. Michael McFarland National Science Foundation Graduate Research Fellowship Recipient
2014	B.Sc. in Mechanical Engineering, University of Akron, Akron, OH

Professional Employment

2018–2024	Assistant Professor, Department of Mechanical and Materials Engineering, University of Nebraska-Lincoln, Lincoln, NE
2015–2018	National Science Foundation Graduate Research Fellow, University of Illinois at Urbana-Champaign, Urbana, IL
2018	Research Assistant, University of Illinois at Urbana-Champaign, Urbana, IL
2015–2018	Teaching Assistant, University of Illinois at Urbana-Champaign, Urbana, IL
2015	Summer Graduate Research Intern, Sandia National Laboratories, Albuquerque, NM
2014	Predoctoral Fellow, University of Illinois at Urbana-Champaign, Urbana IL

Grants & Fellowships

Awarded Research Grants (Total: $2,120,279, Personal Share: $1,712,120)

2023-2028	11. **NSF CAREER, Dynamics, Control and System Diagnostics Program**, "CAREER: Modeling the Loosening of Bolted Joints due to Nonlinear Dynamics of Structural Assemblies," **PI: K.J. Moore**, Total Amount: $727,410, Award Number: 2237715, 2023-2028. `https://www.nsf.gov/awardsearch/showAward?AWD_ID=2237715`
2023-2026	10. AFOSR, Defense Established Program to Stimulate Competitive Research (DEPSCoR), "Understanding the Nonlinear Dynamics of Large-Amplitude Waves in Metamaterials with Defects Via Analysis of Data-assisted Reduced-order Models," PI: P. Grover, **Co-PI: K.J. Moore**, Total Amount: $599,605, Personal Share: $209,861, 2023-2026. `https://www.defense.gov/News/Releases/Release/Article/3390690/dod-announces-awards-under-the-defense-established-program-to-stimulate-competi/`

2022-2025 9. **AFOSR, Young Investigator Program**, "Digital Engineering the Test and Modeling Process: Autonomous Methods for Reconciling Test and Model Results," **PI: K.J. Moore**, Total Amount: $404,621, Award Number: FA9550-22-1-0295, 2022-2025. https://www.afrl.af.mil/News/Article/2835114/afosr-awards-grants-to-36-scientists-and-engineers-through-its-young-investigat/

2022-2025 8. NSF Disabilities and Rehabilitation Engineering Program, "Collaborative Research: Detecting Gait Phases with Raised Metabolic Cost using Robotic Perturbations and System Identification for Enabling Targeted Rehabilitation Therapy," **PI: K.J. Moore** in collaboration with P. Malcolm (University of Nebraska Omaha [UNO]), My Amount: $235,290, Award Number: 2203144, 2022-2025. https://www.nsf.gov/awardsearch/showAward?AWD_ID=2203144&HistoricalAwards=false

2022-2023 7. Cruze Distribution LLC dba ARYSE under AFOSR STTR Phase II, "STTR: Performance Knee Brace," **PI: K.J. Moore**, Total Amount: $44,954, Award Number: 145106, 2022-2023

2021-2022 6. NASA, NASA Nebraska EPSCoR, "FIRST: Understanding the Nonlinear Dynamics Governing Vertical-Lift Vehicles with Variable-speed, Fixed Rotors," **PI: K.J. Moore**, Total Amount: $15,000, 2021.

2021-2022 5. University of Nebraska Preliminary Data and Application Grant, "Detecting the Walking Phases with Raised Oxygen Costs for Targeted Therapy," PI: P. Malcolm (UNO), **Co-PI: K.J. Moore**, Total Amount: $38,399 (Personal Share: $19,984), 2021-2022.

2021-2022 4. NSF Nebraska EPSCoR, "FIRST: The How, Why, and When of Unwanted Disassembly: Inexpensive Dynamical Models for Loosening of Bolted Joints," **PI: K.J. Moore**, Total Amount: $25,000, Grant Number: OIA-1557417, 2021-2022.

2021-2022 3. UNL Faculty Seed Grant, "Determining the Interactions Between Bolts During Unwanted Loosening," **PI: K.J. Moore**, Total Amount: $10,000, 2021-2022.

2020-2021 2. NASA, NASA Nebraska EPSCoR, "Design of Nonlinear Vibration Absorbers to Enhance Aeroelastic Performance of High-aspect-ratio Wings in Commercial Aircraft," **PI: K.J. Moore**, Total Amount: $15,000, Grant Number: 80NSSC19M0065, 2019-2020.

2019-2020 1. NASA, NASA Nebraska Space Grant, "Manipulating Nonlinear Absorbers to Enhance Vibration Suppression in Ultra-high-aspect-ratio Wings," **PI: K.J. Moore**, Total Amount: $5,000, Grant Number: NNX15AI09H, 2019-2020.

Fellowships & Awards - University of Nebraska-Lincoln (Total: $159,984)

2023 14. Professor Guest Fellowship, Los Alamos Dymamics Summer School, Los Alamos National Laboratory, Total Amount: $38,436, June-August 2023.

2023 13. **College Faculty Research and Creative Activity Award**, College of Engineering, University of Nebraska, Total Amount: $2,500, 2023.

2022 12. **ONR Summer Faculty Research Program**, Naval Surface Warfare Center Carderock Division, "Capability Expansion of Hardware-in-the-Loop Simulations for SHM Applications," Office of Naval Research, Mentors: Drs. Alysson Mondoro and Benjamin Grisso, Total Amount: $20,000, 2022.

2022 11. **Henry Y. Kleinkauf Family Distinguished New Faculty Teaching Award**, College of Engineering, University of Nebraska-Lincoln, Total Amount: $2,500, 2022.

2021 10. University of Nebraska-Lincoln, College of Engineering Teaching Fellow, Total Amount: $1,500, 2021-2022.

2022 9. University of Nebraska-Lincoln CAREER Club, Total Amount: $10,000, 2022.

2021 8. University of Nebraska-Lincoln, College of Engineering Teaching Fellow, Total Amount: $2,000, 2021-2022.

2021 7. **AFOSR Summer Faculty Fellowship Program**, Eglin Air Force Base, "Concrete Sled Testing," Air Force Office of Scientific Research, Mentor: Dr. Elisabetta Jerome, Total Amount: $24,048, 2021.

2021 6. University of Nebraska-Lincoln CAREER Club, Total Amount: $10,000, 2021.

2020 5. **AFOSR Summer Faculty Fellowship Program**, Virtual, "Research on Wave Interaction in Stacked Concrete Slabs," Air Force Office of Scientific Research, Mentor: Dr. Elisabetta Jerome, Total Amount: $18,000, 2020.

2019 4. Faculty Fellowship Program in Israel, Jewish National Fund, Total Amount: $10,000, 2019-2020.

2019 3. University of Nebraska-Lincoln CAREER Club, Total Amount: $10,000, 2019-2020.

2019 2. University of Nebraska-Lincoln Peer Review of Teaching Fellowship, Total Amount: $1,000, 2019-2020.

2018 1. University of Nebraska-Lincoln Research Development Fellows Program, Total Amount: $10,000, 2018-2019.

Fellowships & Awards - University of Illinois at Urbana-Champaign (Total: ∼$154,500)

2015 5. NSF Graduate Research Fellowship Program, "Nonlinear System Identification, Reduced Order Modeling, and Model Updating of the Effects of Mechanical Joints on Structural Dynamics," Total Amount: $138,000, Grant Number: DGE-1144245, 2015-2018.

2015 4. MechSE Travel Scholarship, University of Illinois at Urbana-Champaign, 2015–2016.

2014 3. George A. Costello Memorial Fellowship, University of Illinois at Urbana-Champaign, 2014.

2014 2. Thomas J. and Virginia Fisher Dolan Fellowship, University of Illinois at Urbana-Champaign, 2014.

2014 1. Henry L. Langhaar Memorial Fellowship, University of Illinois at Urbana-Champaign, 2014.

Journal Publications

Supervised by Dr. Moore: [1]Undergraduate student, [2]Masters student, [3]Ph.D. student, [4]Postdoctoral scholar

S 33. J.D. Brown[1], M. Mustafa[3], **K.J. Moore**, "Vibration Mitigation of a Model Aircraft with High-Aspect-Ratio Wings Using Two-Dimensional Nonlinear Vibration Absorbers," *International Journal of Non-linear Mechanics* [IF: 3.2], revisions submitted April 5, 2024.

S 32. M. Nasr[2], A.Singh[3], **K.J. Moore**, "Smart Automatic Modal Hammer: Predictor-Corrector Approach for Accurate Excitation of Dynamical Systems," *Experimental Techniques* [IF: 1.700], submitted April 3, 2024.

S 31. B.J. Chang, L.A. Bergman, **K.J. Moore**, W.A. Silva, A.F. Vakakis, "Nonlinear Modal Interaction Identification in KTH-NASA Generic Fighter in Supersonic Flow in Transonic Dynamics Tunnel," *AIAA Journal* [IF: 2.295], submitted April 3, 2024.

2024 30. C. López[3], **K.J. Moore**, "Enhanced Adaptive Linear Chirplet Transform for Crossing Frequency Trajectories," *Journal of Sound and Vibration* [IF: 4.761], 578:11835, 2024. https://dx.doi.org/10.1016/j.jsv.2024.118358

2023 29. A. Singh[3], **K.J. Moore**, "Component-Scaled Signal Reconstruction for Enhanced Noise Filtration," *Journal of Vibration and Control* [IF: 2.8], 29(3-4):700-713, 2023. https://dx.doi.org/10.1177/10775463211051461

2023 28. C. Wang[3], J.D. Brown[1], A. Singh[3], **K.J. Moore**, "A Two-dimensional Nonlinear Vibration Absorber Using Elliptical Impacts and Sliding," *Mechanical Systems and Signal Processing* [IF: 8.934], 189:110068, 2023. https://dx.doi.org/10.1016/j.ymssp.2022.110068

2022 27. C. Wang[3], G. Yañez González, C. Wittich, **K.J. Moore**, "Energy Isolation in a Multi-floor Nonlinear Structure Under Harmonic Excitation," *Nonlinear Dynamics* [IF: 5.741], 110:2049-2077, 2022. https://dx.doi.org/10.1007/s11071-022-07744-5.

2022 26. C. Wang[3], E. Krings, A.T. Allen[1], E.J. Markvicka, **K.J. Moore**, "Low-to-High Frequency Targeted Energy Transfer Using a Nonlinear Energy Sink with Softening-hardening Nonlinearity," *International Journal of Non-linear Mechanics* [IF: 3.2], 147:104194, 2022. https://dx.doi.org/10.1016/j.ijnonlinmec.2022.104194

2022 25. A. Singh[3], **K.J. Moore**, "An Open-source, Scalable, Low-cost Automatic Modal Hammer for Studying Nonlinear Dynamical Systems," *Experimental Techniques* [IF: 1.700], 46:775-792, 2022. https://dx.doi.org/10.1007/s40799-021-00516-7

2022 24. C. López[3], Á. Naranjo, **K.J. Moore**, "Hidden Markov Model based Stochastic Resonance and Its Application to Bearing Fault Diagnosis," *Journal of Sound and Vibration* [IF: 4.761], 528:116890, 2022. https://dx.doi.org/10.1016/j.jsv.2022.116890

2022 23. S. Aldana[2], **K.J. Moore**, "Dynamic Interactions Between Two Axially Aligned Threaded Joints Undergoing Loosening," *Journal of Sound and Vibration* [IF: 4.761], 520:116625, 2022. https://dx.doi.org/10.1016/j.jsv.2021.116625

2022 22. M. Jin, G. Kosova, M. Cenedese, W. Chen, A. Singh[3], D. Jana, M.R.W. Brake, C.W. Schwingshackl, **K.J. Moore**, J.P. Noël, "Measurement and Identification of the Nonlinear Dynamics of a Jointed Structure Using Full-Field Data; Part II - Nonlinear System Identification," *Mechanical Systems and Signal Processing* [IF: 8.934], 166:108402, 2022. https://dx.doi.org/10.1016/j.ymssp.2021.108402

2022 21. W. Chen, D. Jana, A. Singh[3], M. Jin, M. Cenedese, G. Kosova, M.R.W. Brake, C.W. Schwingshackl, **K.J. Moore**, J.P. Noël, "Measurement and Identification of the Nonlinear Dynamics of a Jointed Structure Using Full-Field Data; Part I – Measurement of Nonlinear Dynamics," *Mechanical Systems and Signal Processing* [IF: 8.934], 166:108401, 2022. https://dx.doi.org/10.1016/j.ymssp.2021.108401

2022 20. C. López[3], D. Wang, Á. Naranjo, **K.J. Moore**, "Box-Cox-Sparse-Measures-Based Blind Filtering: Understanding the Difference between the Maximum Kurtosis Deconvolution and the Minimum Entropy Deconvolution," *Mechanical Systems and Signal Processing* [IF: 8.934], 165:108376, 2022. https://dx.doi.org/10.1016/j.ymssp.2021.108376

2021 19. A. Singh[3], **K.J. Moore**, "Identification of Multiple Local Nonlinear Attachments Using a Single Measurement," *Journal of Sound and Vibration* [IF: 4.761], 513:116410, 2021. https://dx.doi.org/10.1016/j.jsv.2021.116410

2021 18. J.D.E. Dalisay, **K.J. Moore**, L.A. Bergman, A.F. Vakakis, "Local nonlinear stores induce global modal interactions in the steady-state dynamics of a model airplane," *Journal of Sound and Vibration* [IF: 4.761], 500:116020, 2021. https://dx.doi.org/10.1016/j.jsv.2021.116020

2021 17. C. Wang[3], **K.J. Moore**, "On Nonlinear Energy Flows in Nonlinearly Coupled Oscillators with Equal Mass," *Nonlinear Dynamics* [IF: 5.741], 103:343-366, 2021. https://dx.doi.org/10.1007/s11071-020-06120-5

2020 16. A. Singh[3], **K.J. Moore**, "Characteristic Nonlinear System Identification of Clearance Nonlinearities in Local Attachments," *Nonlinear Dynamics* [IF: 5.741], 102:1667-1684, 2020. https://dx.doi.org/10.1007/s11071-020-06004-8

2020 15. J.D.E. Dalisay, **K.J. Moore**, L.A. Bergman, A.F. Vakakis, "Effects of Nonlinear Stores on the Dynamics of a Computational Model Airplane," *Journal of Aircraft* [IF: 1.348], 57(5):938-957, 2020. https://dx.doi.org/10.2514/1.C035736

2019 14. **K.J. Moore**, "A Reduced-order Model for Loosening Mechanics of Axial Joints," *ASME Journal of Applied Mechanics* [IF: 2.794], 86(12):121007, 2019. https://dx.doi.org/10.1115/1.4044813

2019 13. **K.J. Moore**, "Characteristic Nonlinear System Identification: A Data-driven Approach for Local Nonlinear Attachments," *Mechanical Systems and Signal Processing* [IF: 8.934], 131:335-347, 2019. https://dx.doi.org/10.1016/j.ymssp.2019.05.066

2019 12. **K.J. Moore**, A. Mojahed, L.A. Bergman, A.F. Vakakis, "Local Nonlinear Stores Induce Global Effects in the Dynamics of an Experimental Model Airplane," *AIAA Journal* [IF: 2.295], 57(11):4953-4965, 2019. https://dx.doi.org/10.2514/1.J058311

2019 11. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Direct Detection of Nonlinear Modal Interactions From Time Series Measurements," *Mechanical Systems and Signal Processing* [IF: 8.934], 125:311–329, 2019. https://dx.doi.org/10.1016/j.ymssp.2017.09.010

2019 10. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Time-Series Based Nonlinear System Identification of Modal Interactions Caused by Strongly Nonlinear Attachments," *Journal of Sound and Vibration* [IF: 4.761], 438:13–32, 2019. https://dx.doi.org/10.1016/j.jsv.2018.09.033

2018 9. A. Mojahed, **K.J. Moore**, L.A. Bergman, A.F. Vakakis, "Strong Geometric Softening-Hardening Nonlinearities in an Oscillator Composed of Linear Stiffness and Damping Elements," *International Journal of Non-linear Mechanics* [IF: 3.2], 11:94-111, 2018. https://dx.doi.org/10.1016/j.ijnonlinmec.2018.09.004

2018 8. **K.J. Moore**, A.F. Vakakis, "Wave Non-Reciprocity at a Nonlinear Structural Interface," *Acta Mechanica* [IF: 2.645], 229(10):4057-4070, 2018.https://dx.doi.org/10.1007/s00707-018-2212-5

2018 7. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Wavelet-Bounded Empirical Mode Decomposition for Vibro-Impact Analysis," *Nonlinear Dynamics* [IF: 5.741], 93(3):1559–1577, 2018. https://dx.doi.org/10.1007/s11071-018-4276-0

2018 6. J. Bunyan, **K.J. Moore**, A. Mojahed, M.D. Fronk, S. Tawfick, M. Leamy, A.F. Vakakis, "Acoustic Non-reciprocity in a Lattice Incorporating Nonlinearity, Asymmetry and Internal Scale Hierarchy: Experimental Study," *Physical Review E* [IF: 2.707], 97(5):052211, 2018. https://dx.doi.org/10.1103/PhysRevE.97.052211

2018 5. **K.J. Moore**, J. Bunyan, S.H. Tawfick, O.V. Gendelman, S. Li, M. Leamy, A.F. Vakakis, "Non-Reciprocity in the Dynamics of Coupled Oscillators with Nonlinearity, Asymmetry and Scale Hierarchy," *Physical Review E* [IF: 2.707], 97(1):012219, 2018. https://dx.doi.org/10.1103/PhysRevE.97.012219

2018 4. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Wavelet-Bounded Empirical Mode Decomposition for Measured Time Series Analysis," *Mechanical Systems and Signal Processing* [IF: 8.934], 99:14–29, 2018. https://dx.doi.org/10.1016/j.ymssp.2017.06.005

2017 3. **K.J. Moore**, M. Kurt, M. Eriten, J.C. Dodson, J.R. Foley, J.C. Wolfson, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Nonlinear Parameter Identification of a Mechanical Interface Based on Primary Wave Scattering," *Experimental Mechanics* [IF: 2.872], 57(9):1495–1508, 2017. https://dx.doi.org/10.1007/s11340-017-0320-0

2017 2. M. Kurt, **K.J. Moore**, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Nonlinear model updating applied to the IMAC XXXII Round Robin benchmark system," *Mechanical Systems and Signal Processing* [IF: 8.934], 88:111–122, 2017. https://dx.doi.org/10.1016/j.ymssp.2016.10.016

2015 1. Y. Zhang, **K.J. Moore**, D.M. McFarland, A.F. Vakakis, "Targeted energy transfers and passive acoustic wave redirection in a two-dimensional granular network under periodic excitation." *Journal of Applied Physics* [IF: 2.710], 118(23):234901, 2015. https://dx.doi.org/10.1063/1.4937898

Invited Keynote Lectures

2023 1. "The Mechanics and Reduced-Order Modeling of Loosening Bolts," Tribomechadynamics Junior Keynote, *Tribomechadynamics Conference*, Houston, TX, August 2, 2023.

Conference Proceedings and Presentations

Supervised by Dr. Moore: [1]Undergraduate student, [2]Masters student, [3]PhD student, [4]Postdoctoral scholar

2024 65. C. López[3], A. Singh[3], Á. Naranjo, **K.J. Moore**, "," *11th European Nonlinear Dynamics Conference*, Delft, Netherlands, July 22–26, 2024.

2024 64. F. Camargo de Oliveira Kobayashi[3], B. Johnson[1], A. Singh[3], **K.J. Moore**, "," *11th European Nonlinear Dynamics Conference*, Delft, Netherlands, July 22–26, 2024.

2024 63. C. López[3], T. Ramsey[1], **K.J. Moore**, "Digital Engineering The Test And Modeling Process: Autonomous Methods For Reconciling Test And Model Results," *JANNAF 18th Modeling and Simulation (MSS)*, Oklahoma City, OK, May 6–9, 2024.

2024 62. J.E. Arroyo[3], T. Ramsey[1], C. López[3], **K.J. Moore**, "Learning Missing Data in Measurements using Meta Modeling Techniques," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2024 61. C. López[3], **K.J. Moore**, "Enhanced Adaptive Linear Chirplet Transform for Multi-Component Signals with Intersecting Instantaneous Frequencies," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2024 60. F. Camargo de Oliveira Kobayashi[3], B. Johnson[1], A. Singh[3], **K.J. Moore**, "Mathematical Modeling of the Nonlinear Dynamics of Bolted Joint Loosening," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2024 59. M. Mustafa[3], **K.J. Moore**, "The Effects of Mass and Loading Conditions on Energy Flows in Coupled Nonlinear Oscillators," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2024 58. M. Nasr[2], A. Singh[3], **K.J. Moore**, "Smart Automatic Modal Hammer for Studying Nonlinear Dynamical Systems," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2024 57. K. Hart; E. Lewis; S. Sinclair; G. Flynn; **K.J. Moore**, C. Haynes, "A Characterization of the Uncertainty in Force-Control Testing for Aerospace Applications," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2024 56. K. Alkady, J. Emms, J. Arroyo[3], D. Rohe, D. Aragon, R. Hopkins, R.J. Kuether, **K.J. Moore**, "Full-Field Diagnostics of Bolted Joints Using High-Speed Optical Techniques," *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.

2023 55. M. Mustafa[3], A. Dzewaltowski, S. Song, P. Malcolm, **K.J. Moore**, "Estimation of Within-stride Metabolic Cost Using Feedforward Neural Networks," *4th Great Plains Biomechanics Conference*, Omaha, NE, June 5, 2023.

2023 54. C. López[3], Á. Naranjo, A. Singh[3], **K.J. Moore**, "Data-driven Euler-Lagrange Approach for Time Series Analysis," *International Modal Analysis Conference XLI*, Austin, TX, February 13–16, 2023.

2023 53. J.D. Brown[1], **K.J. Moore**, "Experimental Verification of Nonlinear Energy Sinks for Diminishing Vibrations in High-aspect Ratio Wings," *International Modal Analysis Conference XLI*, Austin, TX, February 13–16, 2023.

2023 52. I. Lawal, M.R. Haberman, **K.J. Moore**, "Simulating Nonlinear Beating Phenomena Induced by Dry-Friction in Dynamic Systems," *International Modal Analysis Conference XLI*, Austin, TX, February 13–16, 2023.

2023 51. T. Kinnard, D. McMullan, K. Pane, G.S. Flynn, T. Thompson, **K.J. Moore**, "Designing Accelerated Vibration Tests using Model-Based Equivalent Damage Prediction," *International Modal Analysis Conference XLI*, Austin, TX, February 13–16, 2023.

2022 50. C. Wang[3], **K.J. Moore**, "Breaking Reciprocity to Realize Extreme Energy Isolation in Coupled Oscillators," *Acoustical Society of America*, Denver, CO, May 23–27, 2022.

2022 49. C. López[3], Á. Naranjo, **K.J. Moore**, "Hidden Markov Model based Stochastic Resonance and its Application to Bearing Fault Diagnosis," *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.

2022 48. A. Singh[3], **K.J. Moore**, "Data-Driven Identification of Multiple Local Nonlinear Attachments Installed on a Single Primary Structure," *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.

2022 47. A. Singh[3], **K.J. Moore**, "An Open-source, Automatic Modal Hammer for Studying Nonlinear Dynamical Systems," *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.

2022 46. C. Wang[3], **K.J. Moore**, "Applying Quasi-zero Stiffness Introduced by Elastic Strut Elements to Achieve Energy Isolation and Dissipation," *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.

2022 45. C. Wang[3], J.D. Brown[1], **K.J. Moore**, "Energy Isolation by Introducing 2-D Nonlinear Energy Sink with Impact and Sliding on An Elliptical Frame," *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.

2022 44. J.D. Brown[1], **K.J. Moore**, "Using Nonlinear Energy Sinks to Diminish Vibrations in High-aspect Ratio Wings," *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.

2021 43. S.A. Aldana[2], **K.J. Moore**, "Dynamic Wave Interactions in Axial Rods With Multiple Threaded Interfaces," *ASME International Design Engineering and Technical Conference*, Virtual Conference, August 17–20, 2021.

2021 42. J.D. Brown[1], **K.J. Moore**, "Investigation of Vibration Mitigation in High-aspect-ratio Wings Using Multi-directional Clearance Nonlinearities," *ASME International Design Engineering and Technical Conference*, Online Virtual Conference, August 17–20, 2021.

2021 41. A. Singh[3], **K.J. Moore**, "An Open-Source, Low-Cost Automatic Modal Hammer for Studying Nonlinear Dynamical Systems," *ASME International Design Engineering and Technical Conference*, Online Virtual Conference, August 17–20, 2021.

2021 40. A. Singh[3], **K.J. Moore**, "Data-Driven Identification of Multiple Local Nonlinear Attachments," *ASME International Design Engineering and Technical Conference*, Online Virtual Conference, August 17–20, 2021.

2021 39. C. Wang[3], A.T. Allen[1], E. Krings, E.J. Markvicka, **K.J. Moore**, "Energy Isolation Study by Utilizing Quasi-zero Stiffness Introduced by Buckling in Elastic Strut Elements," *ASME International Design Engineering and Technical Conference*, Online Virtual Conference, August 17–20, 2021.

2021 38. G.M. Eymael[1], **K.J. Moore**, "The Effect of Store-to-store Energy Transfers On the Global Dynamics of Aircraft," *ASME International Design Engineering and Technical Conference*, Online Virtual Conference, August 17–20, 2021.

2021 37. L. Wang, B. Beamer, **K.J. Moore**, K. Krainc, "Case Study - Lesson Plan for Noise Control Engineering Concepts for use in ABET Accredited Engineering Programs," *Inter-Noise 2021*, Virtual Conference, August 1–5, 2021.

2021 36. J.D.E. Dalisay, **K.J. Moore**, L.A. Bergman, A.F. Vakakis, "Vibro-impacts Originating in Wing Attachments Induce Global Chaotic Effects in the Steady-state Dynamics of a Model Airplane," *NNM 2021*, Ascona, Switzerland, July 6–9, 2021.

2021 35. J.D. Brown[1], **K.J. Moore**, "Using Nonlinear Vibration Absorbers to Mitigate Unwanted Motion in High-aspect-ratio Wings," *AIAA Region V Student Conference*, Virtual Conference, April 2–3, 2021.

2021 34. C. Wang[3], **K.J. Moore**, "Energy Isolation in a Multi-floor Nonlinear Structure under Harmonic Excitation," *International Modal Analysis Conference XXXIX*, Virtual Conference (Originally in Orlando, FL), February 8–11, 2021.

2021 33. A. Singh[3], **K.J. Moore**, "Joint Interface Contact Area Predictions Using Surface Strain Measurements," *International Modal Analysis Conference XXXIX*, Virtual Conference (Originally in Orlando, FL), February 8–11, 2021.

2021 32. S.A. Aldana[2], **K.J. Moore**, "Wave Interactions and Modeling of Loosening in Axial Rods with Multiple Threaded Interfaces," *International Modal Analysis Conference XXXIX*, Virtual Conference (Originally in Orlando, FL), February 8–11, 2021.

2020 31. H.A. Van Heuveln[1], **K.J. Moore**, "Strong Vibration Mitigation in High-Aspect-Ratio Wings Using a Nonlinear Energy Sink With Elliptic Clearance," *ASME International Design Engineering and Technical Conference*, St. Louis, MO, August 16–19, 2020.

2020 30. **K.J. Moore**, "Reduced-order Modeling of Loosening Mechanics in Axially Oriented Threaded Joints," *ASME International Design Engineering and Technical Conference*, St. Louis, MO, August 16–19, 2020.

2020 29. **K.J. Moore**, "A New Data-Driven System Identification Method for Local Attachments with Smooth and Non-smooth Nonlinearities," *ASME International Design Engineering and Technical Conference*, St. Louis, MO, August 16–19, 2020.

2020 28. C. Wang[3], **K.J. Moore**, "Breaking Dynamic Reciprocity Allows for Strong Vibration Isolation in a Multi-floor Nonlinear Structure," *ASME International Design Engineering and Technical Conference*, St. Louis, MO, August 16–19, 2020.

2020 27. **K.J. Moore**, "The Characteristic Nonlinear System Identification: A Method for Local, Nonlinear Attachments," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2020 26. H.A. Van Heuveln[1], **K.J. Moore**, "Manipulating Nonlinear Absorbers to Enhance Vibration Suppression in Ultra-high-aspect-ratio Wings," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2020 25. A. Singh[3], **K.J. Moore**, "Enhancing Noise Filtration Through Linear Combinations of Intrinsic Mode Functions," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2020 24. C. Wang[3], **K.J. Moore**, "Targeted Vibration Isolation through Breaking Dynamic Reciprocity in a Multi-floor Nonlinear Structure," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2020 23. M. Miller, C. Johnson, N. Sonne, J. Mersch, R. Kuether, J. Smith, J. Ortiz, G. Castelluccio, **K.J. Moore**, "Bolt Preload Loss Due to Modal Excitation of a C-Beam Structure," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2020 22. G. Kosova, M. Jin, M. Cenedese, W. Chen, A. Singh[3], D. Jana, M.R.W. Brake, C.W. Schwingshackl, **K.J. Moore**, J.P. Noël, "Nonlinear System Identification of a Jointed Structure Using Full-field Data: Part II Analysis," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2020 21. A. Singh[3],W. Chen, D. Jana, M. Jin, G. Kosova, M. Cenedese, M.R.W. Brake, C.W. Schwingshackl, **K.J. Moore**, J.P. Noël, "Nonlinear System Identification of a Jointed Structure Using Full-field Data: Part I Experimental Investigation," *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

2019 20. J.D. Dalisay, **K.J. Moore**, L.A. Bergman, A. F. Vakakis, "Computational Simulation of the Effects of Local Nonlinear Stores on the Global Dynamics of an Experimental Model Plane," *ASME International Design Engineering and Technical Conference*, Anaheim, CA, August 18–21, 2019.

2019 19. **K.J. Moore**, "A Reduced-order Model for Axial Joint Loosening Mechanics," *Tribomechadynamics Conference*, Houston, TX, July 31–August 2, 2019.

2019 18. M. Cenedese, G. Kosova, M. Jin, W. Chen, A. Singh[3], D. Jana, M.R.W. Brake, C.W. Schwingshackl, **K.J. Moore**, J.P. Noël,, "Nonlinear System Identification of a Jointed Structure Using Full Field Data; Part 2: Analysis," *Tribomechadynamics Conference*, Houston, TX, July 31–August 2, 2019.

2019 17. D. Jana, A. Singh[3],W. Chen, M. Jin, G. Kosova, M. Cenedese, M.R.W. Brake, C.W. Schwingshackl, **K.J. Moore**, J.P. Noël, "Nonlinear System Identification of a Jointed Structure Using Full Field Data; Part 1: Experiments," *Tribomechadynamics Conference*, Houston, TX, July 31–August 2, 2019.

2019 16. **K.J. Moore**, A. Mojahed, J. Dalisay, L.A. Bergman, A.F. Vakakis, "Experimental Study of Global Response of a Model Airplane with a Strongly Nonlinear Store on Each Wing," *7th International Conference on Nonlinear Vibrations, Localization and Energy Transfer*, Marseille, France, July 1–4, 2019.

2019 15. **K.J. Moore**, L.A. Bergman, A.F. Vakakis, "Influence of Local Nonlinearities on Global System Dynamics and Nonlinear System Identification," *Engineering Mechanics Institute Conference*, California Institute of Technology, Pasadena, CA, June 18-21, 2019.

2019 14. **K.J. Moore**, A. Mojahed, L.A. Bergman, A.F. Vakakis, "Local Nonlinear Attachments Induce Global Effects in Airplane Dynamics," *International Modal Analysis Conference XXXVII*, Orlando, FL, January 28–31, 2019.

2018 13. J. Bunyan, **K.J. Moore**, A. Mojahed, M. D. Fronk, M. Leamy, S. Tawfick, A.F. Vakakis, "Acoustic Non-reciprocity in a Lattice with Nonlinearity, Asymmetry and Internal Scale Hierarchy," *ASME International Design Engineering Technical Conference*, Quebec City, Quebec, Canada, August 26–29, 2018.

2018 12. **K.J. Moore**, J. Bunyan, A. Mojahed, S. Tawfick, O.V. Gendelman, S. Li, M. Leamy, A.F. Vakakis, "Non-reciprocal Acoustics of Lattices with Nonlinearity, Asymmetry and Scale Hierarchy," *U.S. National Congress for Theoretical and Applied Mechanics* (18th USNC TAM), Chicago, IL, June 4–9, 2018.

2018 11. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Time-series Based System Identification of Nonlinear Attachments," *International Modal Analysis Conference (International Modal Analysis Conference XXXVI)*, Orlando, FL, February 12–15, 2018.

2017 10. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis,"Direct Detection of Nonlinear Modal Interactions for Model Updating Using Measured Time Series," *ASME International Design Engineering and Technical Conference*, Cleveland, OH, 2017.

2017 9. **K.J. Moore**, C.A. Herrera, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Reduced-order Modeling of Strongly Nonlinear Systems Using Measured Time Series," *9th European Nonlinear Oscillation Conference*, Budapest, Hungary, June 25–30, 2017. http://congressline.hu/enoc2017/abstracts/65.pdf

2017 8. **K.J. Moore**, C.A. Herrera, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Reduced-order Modeling of Strongly Nonlinear Systems Using Measured Time Series," *International Modal Analysis Conference (International Modal Analysis Conference XXXV)*, Garden Grove, CA, January 30–February 2, 2017.

2016 7. M.R.W. Brake, **K.J. Moore**, "A Heuristic Model of Force-Displacement Curves for the Failure of Mechanical Bolts in Tension," *ASME International Design Engineering Technical Conference*, Charlotte, NC, August 21–24, 2016.

2016 6. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Nonlinear System Identification of Mechanical Interfaces Based on Wave Propagation," in: J.M. Floryan (eds) *Contributions to the Foundations of Multidisciplinary Research in Mechanics: Papers presented during the 24th International Congress of Theoretical and Applied Mechanics*, International Congress of Theoretical and Applied Mechanics, Montreal, August 22–26, 2016. http://iutam.org/publications/ictam-proceedings/ictam_2016

2016 5. **K.J. Moore**, C.A. Herrera, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Estimation of the Natural Frequencies of Strongly Nonlinear Systems from Time-Domain Response Data," *ISWAV 2016: 4th International Symposium and Workshop on Acoustics and Vibration*, Harbin, China, July 26-29, 2016.

2016 4. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Nonlinear System Identification of Mechanical Interfaces Based on Wave Propagation," *Proceedings: International Conference on Nonlinear Vibrations, Localization and Energy Transfer*, Liège, Belgium, July 4–8, 2016. http://www.nnm2016liege.com/en/download

2016 3. R.C. Flicek, **K.J. Moore**, G.M. Castelluccio, M.R.W. Brake, T. Truster, C.I. Hammetter, "Stress Waves Propagating Through Bolted Joints," In: Allen M., Mayes R., Rixen D. (eds) *Dynamics of Coupled Structures, Volume 4. Conference Proceedings of the Society for Experimental Mechanics Series*. Springer, 2016. https://dx.doi.org/10.1007/978-3-319-29763-7_49

2016 2. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A.Bergman, A.F. Vakakis, "Nonlinear System Identification of Mechanical Interfaces Based on Wave Scattering," In: Allen M., Mayes R., Rixen D. (eds) *Dynamics of Coupled Structures, Volume 4. Conference Proceedings of the Society for Experimental Mechanics Series*, Springer, 2016. https://dx.doi.org/10.1007/978-3-319-29763-7_32

2015 1. M. Kurt, **K.J. Moore**, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Nonlinear Model Updating Methodology with Application to the International Modal Analysis Conference XXXIII Round Robin Benchmark Problem," In: G. Kerschen, editor. *Nonlinear Dynamics, Volume 1. Conference Proceedings of the Society for Experimental Mechanics Series 5*, Springer International Publishing, 2015. https://dx.doi.org/10.1007/978-3-319-15221-9_31

Invited Talks & Seminars

2023 20. "The Mechanics and Reduced-Order Modeling of Loosening Bolts," *ASME Nebraska Section Professional Development Day*, Ashland, NE, March 21, 2023.

2023 19. "Research Overview: Moore Analytics and Dynamics Laboratory (MoDAL)," *E14 Data Analysis Meeting*, Los Alamos National Laboratory, Los Alamos, NM, August 7, 2023.

2023 18. "Research Overview: Moore Analytics and Dynamics Laboratory (MoDAL)," *E14 Structural Dynamics Meeting*, Los Alamos National Laboratory, Los Alamos, NM, August 7, 2023.

2023 17. "Physics-based Modeling of Strongly Nonlinear Mechanical Structures," Sandia National Laboratories, Albuquerque, NM, August 1, 2023.

2023 16. "Physics-based Data-driven Modeling of Strongly Nonlinear Mechanical Structures," University of Michigan, Ann Arbor, MI, April 10, 2023.

2023 15. "Physics-based Data-driven Modeling of Strongly Nonlinear Mechanical Structures," University of Nebraska-Lincoln, Lincoln, NE, March 7, 2023.

2023 14. "Physics-based Data-driven Modeling of Strongly Nonlinear Mechanical Structures," Purdue University, West Lafayette, IN, February 2, 2023.

2023 13. "Digital Engineering the Test and Modeling Process: Autonomous Methods for Reconciling Test and Model Results," *LethalityONE Briefing*, Remote Meeting, January 30, 2023.

2022 12. "Data-driven Nonlinear System Identification, Physics-based Reduced-order Modeling, and Vibration Reduction of Mechanical Structures," University of Nebraska-Omaha, Omaha, NE, November 4, 2022.

2022 11. "Digital Engineering the Test and Modeling Process: Autonomous Methods for Reconciling Test and Model Results," *WeaponONE Technical Interchange Meeting*, Niceville, FL, October 6, 2022.

2022 10. "Data-driven Nonlinear System Identification, Physics-based Reduced-order Modeling, and Applications to Hardware-in-the-loop Structural Health Monitoring," *FY23 NSWC Carderock Summer Faculty Seminar Series*, Naval Surface Warfare Center Carderock Division, Bethesda, MD, August 10, 2022.

2022 9. "Digital Engineering the Test and Modeling Process: Autonomous Methods for Reconciling Test and Model Results" *AFTC and AFOSR Agile Science of Test & Evaluation Strategic Alignment*, Edwards Air Force Base, CA, July 13, 2022.

2022 8. "The Loosening of Bolts and How to Model Them," University of Nebraska-Lincoln, Lincoln, NE, April 26, 2022.

2021 7. "Data-driven Approaches to Modeling Warhead Penetration and New Directions Towards Digital Engineering of T&E," Virtual Seminar, Air Force Research Laboratory, Eglin Air Force Base, Eglin, FL, August 26, 2021.

2021 6. "Reduced-order Modeling of the Loosening of Bolted Joints: Application to Axially Aligned Joints," *DigiTwin Online Workshop* hosted by Swansea University, June 11, 2021.

2020 5. "Sunday with a Scientist: Vibrations," Virtual Sunday with a Scientist Seminar, University of Nebraska State Museum, Lincoln, NE, 2020.

2020 4. "Reduced-order Modeling of Warhead Penentration in Single and Stacked Concrete Slabs," Virtual Seminar, Air Force Research Laboratory, Eglin Air Force Base, Eglin, FL, 2020.

2019 3. "Reduced-order Modeling of Loosening in Bolted Joints Subjected to Axial Shock Excitation," Sandia National Laboratories, Albuquerque, NM, 2019.

2017 2. "Methods for the Detection of Nonlinear Modal Interactions from Measured Time Series," University of Akron, Akron, OH, 2017.

2016 1. "Nonlinear Identification Tools and Methods," *m+p Modal Analysis Seminar* held at *International Modal Analysis Conference XXXIV*, Orlando, FL, 2016.

Other Presentations, Posters, and Talks

Supervised by Dr. Moore: [1]Undergraduate student, [2]Masters student, [3]PhD student, [4]Postdoctoral scholar

2023 15 **K.J. Moore**, "Research Overview: Moore Dynamics and Analytics Laboratory (MoDAL)," Omaha North High School Visitation Day, Lincoln, NE, October 18, 2023.

2023 14. **K.J. Moore**, "Lightning Talk: Data-driven Testing and Modeling of Nonlinear Mechanical Structures," ASME TCVS Spring Meeting, Chicago, IL, June 5, 2023.

2023 13. M. Mustafa[3], **K. J. Moore**, "A Qualitative Study on the Effects of Mass on Energy Transfer in Coupled Nonlinear Oscillators," *Nebraska Research Days – Graduate Research Exhibition*, March 28, 2023.

2023 12. E. Soukup[1], **K. J. Moore**, "Reciprocity-Breaking Suspension Devices," *Nebraska Research Days – Undergraduate Poster Session and Creative Exhibition*, March 28, 2023.

2023 11. M. Busboom[1], **K. J. Moore**, "Efficacy of Automatic Modal Hammers on HAR-Wing Model with Non-Linear Energy Absorbers," *Nebraska Research Days – Undergraduate Poster Session and Creative Exhibition*, March 28, 2023.

q 2022 9. J.D. Brown[1], **K. J. Moore**, "Using Nonlinear Vibration Absorbers to Mitigate Unwanted Motion in High-aspect-ratio Wings," *Purdue Engineering Virtual Graduate Showcase*, Online Virtual Conference, September 26, 2022

2022 8. G.M. Eymael[1], **K. J. Moore**, "The Effect of Store-to-store Energy Transfers On the Global Dynamics of Aircraft," *Nebraska Research Days – Undergraduate Student Research and Creative Activities Exhibition*, April 11, 2022.

2022 7. Stephanie Vavra[1], Micah Busboom[1], Aleea Stanford[1], **K. J. Moore**, "Understanding the Nonlinear Dynamics Governing Vertical-Lift Vehicles with Variable-speed, Fixed Rotors," *Nebraska Research Days – Undergraduate Student Research and Creative Activities Exhibition*, April 11, 2022.

2022 6. J.D. Brown[1], **K. J. Moore**, "Using Nonlinear Vibration Absorbers to Mitigate Unwanted Motion in High-aspect-ratio Wings," *Nebraska Research Days – Undergraduate Student Research and Creative Activities Exhibition*, April 11, 2022. ***Awarded Best Poster***

2021 5. J.D. Brown[1], **K. J. Moore**, "Using Nonlinear Vibration Absorbers to Mitigate Unwanted Motion in High-aspect-ratio Wings," *Nebraska Academy of Sciences (NAS) Aeronautics and Space Sciences Section*, Online Virtual Conference, April 23, 2021

2021 4. S. Vavra[1], **K.J. Moore**, "Targeted Vibration Isolation of Airline Interior Cabins From External Disturbances," *Nebraska Research Days – Undergraduate Student Research and Creative Activities Exhibition*, April 16, 2021.

2021 3. G.M. Eymael[1], **K.J. Moore**, "Multi-harmonic Vibration Mitigation Through Exploitation of Structural Instability," *Nebraska Research Days – Undergraduate Student Research and Creative Activities Exhibition*, April 16, 2021.

2020 2. A. Allen[1], **K.J. Moore**, "Multi-harmonic Vibration Mitigation Through Exploitation of Structural Instability," *Nebraska Summer Research Virtual Symposium*, August 6, 2020.

2019 1. J.J. Broadway[1], **K.J. Moore**, "Investigation of Digital Image Correlation as a Method of Measuring Bolted Joint Pressure Distribution," *Nebraska Summer Research Symposium*, August 8, 2019.

Chapters In Books

2018 2. **K.J. Moore**, A. Mojahed, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Advanced Nonlinear System Identification for Modal Interactions in Nonlinear Structures: A Review," In: I. Andrianov, A. Manevich, Y. Mikhlin, O. Gendelman (eds) *Problems of Nonlinear Mechanics and Physics of Materials.* Advanced Structured Materials, vol 94. Springer, Cham, 2018. https://dx.doi.org/10.1007/978-3-319-92234-8_7

2018 1. **K.J. Moore**, M. Kurt, M. Eriten, D.M. McFarland, L.A. Bergman, A.F. Vakakis, "Elements of a Nonlinear System Identification Methodology of Broad Applicability with Application to Bolted Joints," In: M.R. Brake (eds) *The Mechanics of Jointed Structures,* Springer International Publishing, 2018. http://dx.doi.org/10.1007/978-3-319-56818-8

Government Reports

2015 2. **K.J. Moore**, R.C. Flicek, G.M. Castelluccio, C. Hammetter, T.J. Truster, M.R.W. Brake, "Stress Waves Propagating Through Jointed Connections," SAND2015-6042D, Sandia National Laboratories, Albuquerque, NM, 2015. https://www.osti.gov/biblio/1339225

2015 1. **K.J. Moore**, M.R.W. Brake, "A Reduced Order Model of Force Displacement Curves for the Failure of Mechanical Bolts in Tension," SAND2015-10871, Sandia National Laboratories, Albuquerque, NM, 2015. https://www.osti.gov/scitech/biblio/1234813

Teaching Experience & Activities

Assistant Professor, University of Nebraska-Lincoln

Professional Development

2021- 4. College of Engineering Teaching Fellow, CoE Faculty Teaching Fellows Program.

2021 3. Completion of Tier 1 Activities, CoE Faculty Teaching Fellows Program.

2020 2. Completion of Tier 0 Activities, College of Engineering Faculty Teaching Fellows Program.

2019-2020 1. Faculty-led Inquiry into Reflective and Scholarly Teaching (FIRST),"Course Portfolio for MECH 416/816: Engineering Acoustics, Spring 2019 and 2020 - A Peer Review of Teaching Benchmark Portfolio," 2020. `https://digitalcommons.unl.edu/prtunl/161`

Courses Taught (Average Rating: 4.6/5)

2024 12. Engineering Acoustics (Graduate & Undergraduate Elective), Spring, 2024.

2023 11. Data-driven Nonlinear Dynamics and Vibrations (Graduate & Undergraduate Elective), Fall, 2023 (Rated 5/5).

2023 10. Engineering Acoustics (Graduate & Undergraduate Elective), Spring, 2023 (Rated 4.70/5).

2022 9. Advanced Vibrations (Graduate Only), Fall, 2022 (Rated 4.92/5).

2022 8. Engineering Acoustics (Graduate & Undergraduate Elective), Spring, 2022 (Rated 4.59/5).

2021 7. Engineering Dynamics (Core Undergraduate), Fall, 2021 (Rated 4.72/5).

2021 6. Engineering Acoustics (Graduate & Undergraduate Elective), Spring, 2021 (Rated 4.68/5)

2021 5. Data-driven Science and Engineering (Graduate & Undergraduate Elective), Spring, 2021 (Individually rated 3.98/5). Co-taught with Drs. P. Rao, E. Marvicka, and P. Grover.

2020 4. Advanced Vibrations (Graduate Only), Fall, 2020 (Rated 4.62/5).

2020 3. Engineering Acoustics (Graduate & Undergraduate Elective), Spring, 2020 (Rated 4.69/5).

2019 2. Engineering Dynamics (Core Undergraduate), Fall, 2019 (Rated 4.33/5).

2019 1. Engineering Acoustics (Graduate & Undergraduate Elective), Spring, 2019 (Rated 4.39/5).

Teaching Assistant, University of Illinois at Urbana-Champaign

2018 4. Intermediate Dynamics, Spring, 2018.

2017 3. Introduction to Nonlinear Dynamics and Vibrations, Spring, 2017.

2016 2. Experimental Stress Analysis, Spring, 2016.

2015 1. Introductory Dynamics, Spring, 2015.

Advising

Doctoral Students (2 Graduated To Date)

2027 8. Sayantan Gosh, "Foundations of Defect Engineering for Dynamic Manipulation of Nonlinear Large-amplitude Waves in Metamaterials," funded by DoD DEPSCoR award, 2027 (expected).

2027 7. Felipe Kobayashi, "Reduced-order Modeling of Loosening Bolts and Their Effect on Global Dynamics," funded by NSF CAREER award, 2027 (expected).

2026 6. Sobhan Mohammadi, "Reduced-order modeling of Nonlinear Wave-induced Vibrations," 2026 (expected).

2026 5. Javier Arroyo, "Estimation of the Evolution of Interfacial Contact in Bolted Joints," funded by AFOSR YIP award and LANL, 2026 (expected).

2025 4. Manal Mustafa, "The Effect of Mass on Energy Guiding in Nonlinear Mechanical Structures," funded by NSF DARE award, 2025 (expected).

2025 3. Cristian López, "Autonomous Updating and Validation of Digital Models," funded by AFOSR YIP award, 2025 (expected).

2022 2. Chengen Wang, "Achieving Energy Guiding and Isolation by Utilizing Nonlinearities and Asymmetry in Structures," August 2022. `https://digitalcommons.unl.edu/dissertations/AAI29323232/`

2022 1. Aryan Singh, "Towards Data-Driven Identification of Nonlinear Dynamical Systems for Building Interpretable Mathematical Models," August 2022. `https://digitalcommons.unl.edu/dissertations/AAI29323206/`

Masters Students (1 Graduated To Date)

2024 2. Mohammad Nasr, "Smart Automatic Modal Hammer for Rapid, Repeatable Testing of Nonlinear Mechanical Structures," May 2024 (expected).

2021 1. Sandro A. Aldana, "Reduced-order Modeling of Loosening in Bolted Joints and Dynamic Interactiosn Between Axially Aligned Threaded Joints," 2021. `https://digitalcommons.unl.edu/mechengdiss/172/`

Undergraduate Researchers

2023-	22. Amber Tannehill, "Reciprocity-Breaking Suspension Devices For Isolation in Harsh Environments," Research Course Credit, 2023-present.
2023-	21. Braxton Peters, "Effect of Shape on the Performance of a 2D Nonlinear Vibration Absorber," MME Undergraduate Research Scholar, 2023-present.
2023-	20. Daniel Brajic, "Reduced-order Modeling of Fluid-Motion-Induced Vibrations, Research Course Credit, 2023-present.
2023-	19. Blake Johnson, "Controlled, Precise Tightening of Bolts to Enable the Systematic Measurement of Surface Strains," funded by UNL UCARE and NSF CAREER grant, 2023-present.
2022-	18. Thomas Ramsey, "Digital Engineering the Test and Modeling Process: Autonomous Methods for Reconciling Test and Model Results," funded by AFOSR YIP Award, Fall 2022-present.
2022-	17. Emma Soukup, "Reciprocity-Breaking Suspension Devices For Isolation in Harsh Environments," funded by UNL UCARE and John Woollam Scholars Fellowship, 2022-present.
2021-	16. Aleea Stanford, "Understanding the Nonlinear Dynamics Governing Vertical-Lift Vehicles with Variable-speed, Fixed Rotors," funded by NASA Nebraska EPSCoR Grant and UNL UCARE, 2021-2023. "Accurate Finite Element Modeling of Lap-jointed Oscillators Undergoing Loosening," funded by UNL UCARE, 2023-present.
2021-2023	15. Micah Busboom, "Understanding the Nonlinear Dynamics Governing Vertical-Lift Vehicles with Variable-speed, Fixed Rotors," funded by NASA Nebraska EPSCoR Grant and UNL UCARE, 2021-2023. "Autonomous Testing and Synchronization of Multiple Automatic Modal Hammers," funded by NASA Nebraska EPSCoR Grant and UNL UCARE, 2022-2023.
2020-2022	14. Judith Brown, "Design of Nonlinear Vibration Absorbers to Enhance Aeroelastic Performance of High-aspect-ratio Wings in Commercial Aircraft," funded by NASA Nebraska EPSCoR Grant, John Woollam Scholars Fellowship, and UNL UCARE, 2020-2022.
2021-2022	13. Sean Griffin, "Employing Video-game Physics Engines to Create Virtual Dynamics Experiments," funded by UNL FYRE Award, 2021–2022.
2021-2022	12. Aden Hester, "Employing Video-game Physics Engines to Create Virtual Dynamics Experiments," funded by UNL FYRE Award, 2021–2022.
2021-2022	11. Anika Dujakovich, "Dynamic Interactions Between Multiple Joints and Bolts Undergoing Loosening," funded by NSF Nebraska EPSCoR Grant and UNL UCARE, 2021–2022.
2020-2022	10. Stephanie Vavra, "Targeted Vibration Isolation of Airline Interior Cabins from External Disturbances," funded by UNL UCARE and John Woollam Scholars Fellowship, 2020-2021 . "Understanding the Nonlinear Dynamics Governing Vertical-Lift Vehicles with Variable-speed, Fixed Rotors," funded by NASA Nebraska EPSCoR Grant and UNL UCARE, 2021-2022.
2020-2022	9. Guilherme Eymael, "Nonlinear Interactions Between Nonlinear Stores on Fighter Jets," funded by UNL UCARE and John Woollam Scholars Fellowship, 2020-present.
2021	8. Sejal Soni, "Dynamic Interactions Between Multiple Joints and Bolts Undergoing Loosening," funded by UNL UCARE, 2021.
2020	7. Thomas Vierk, "Design of Nonlinear Vibration Absorbers to Enhance Aeroelastic Performance of High-aspect-ratio Wings in Commercial Aircraft," funded by NASA Nebraska EPSCoR Grant, Summer-Fall 2020.
2020	6. Rachael Stanek, "Manipulating Nonlinear Absorbers to Enhance Vibration Suppression in Ultra-high-aspect-ratio Wings," funded by NASA Nebraska Mini-grant, Summer 2020.

2019-2020	5.	Ben Franco, "Reduced-order Modeling of Bolted Joint Loosening: Torque-Stiffness and Torque Loss Modeling," funded by UNL UCARE, Summer and Fall 2019.
2019-2020	4.	Austin Hajek, "Investigation Into Energy Flows of Nonlinear Structures," supported through independent study, 2019-2020.
2019-2020	3.	Anna Boothe, "Nonlinear Vibration Mitigation Using a Bunyan-Tawfick Spring," funded by UNL UCARE, Fall 2019 and Summer 2020.
2019-2020	2.	Heath Van Heuveln, "Manipulating Nonlinear Absorbers to Enhance Vibration Suppression in Ultra-high-aspect-ratio Wings," funded by NASA Nebraska Mini-grant, 2019-2020.
2019	1.	Joseph Broadway, "Experimental Investigation of Pressure Distributions Induced by Bolted Joints in Complex Geometries," funded by UNL UCARE, Summer 2019.

Graduate Student Committee Membership

2023-2024	6.	H. Reza, Biomechanics, University of Nebraska-Omaha, expected May 2024. Advisor: P. Malcolm.
2023-2024	5.	K. Alkady, Civil Engineering, expected May 2024. Advisor: C. Wittich.
2021-2024	4.	S. Mohammadreza Farooghi Mehr, Civil Engineering, expected May 2024. Advisor: C. Wittich.
2024	3.	S. Harre, Mechanical, M.S. in Mechanical Engineering & Applied Mechanics, Defended November 2023. Advisor: P. Grover, Thesis Title: Experimental Analysis of Nonlinear Wave Propagation in Bistable Mechanical Metamaterials with a Defect.
2021-2023	2.	A. Dzewaltowski, Biomechanics, University of Nebraska-Omaha, June 2023. Advisor: P. Malcolm, Dissertation Title: Forces within the electromechanical delay and their effects on motor function".
2022	1.	Aniruddha Gaikwad, Ph.D. in Mechanical Engineering & Applied Mechanics, Defended July 2022. Advisor: P.K. Rao `https://digitalcommons.unl.edu/dissertations/AAI29322978/`

Service

Department Service

2022-	2.	Chair, Dynamics and Vibrations Research Area, 2022-present.
2020-2021	1.	Member, MME Research Strategic Planning Committee, 2020-2021.

Professional Organization Committees

2022-	3.	Member, ASME Technical Committee on Sound and Vibration, 2022-present.
2022-	2.	Member, AIAA Structural Dynamics Technical Committee, 2022-present.
2022-2023	1.	Member, AIAA Vertical/Short Take-off and Landing Technical Committee, 2022-2023.

Conference Organization

2023	12.	Chair, Sessions on Applications of Nonlinear Dynamics, *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.
2023	11.	Chair, Sessions on Data-driven Methods for Nonlinear Systems, *International Modal Analysis Conference XLII*, Orlando, FL, January 29–February 1, 2024.
2023	10.	Co-chair, Mini-Symposium on Reduced-Order Modeling and System Identification, *European Nonlinear Oscillations Conference*, Delft, Netherlands, July 22-26, 2024.
2022	9.	Chair, Sessions on Data-driven Methods for Nonlinear Systems, *International Modal Analysis Conference XLI*, Austin, TX, February 13–16, 2023.
2022	8.	Co-Chair, Sessions on Nonlinear Energy Sinks and Vibration Absorbers, *International Modal Analysis Conference XLI*, Austin, TX, February 13–16, 2023.
2022	7.	Co-Chair, Mini-Symposium on Reduced-Order Modeling and System Identification, *European Nonlinear Oscillations Conference*, Lyon, France, July 5–10, 2022 (Delayed due to Covid-19 Pandemic)
2021	6.	Chair, Sessions on Perturbation Methods, *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.
2021	5.	Co-Chair, Sessions on Utilizing Nonlinearity, *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.
2021	4.	Co-Chair, Sessions on Geometric Nonlinearity, *International Modal Analysis Conference XL*, Orlando, FL, February 7–10, 2022.
2020	3.	Co-Chair, Sessions on Exploiting Nonlinearity, *International Modal Analysis Conference XXXIX*, Orlando, FL, February 8–11, 2021.
2020	2.	Co-Chair, Sessions on Experimental Nonlinear Dynamics, *International Modal Analysis Conference XXXIX*, Orlando, FL, February 8–11, 2021.
2019	1.	Co-Chair, Sessions on Nonlinear Vibration Mitigation, *International Modal Analysis Conference XXXVIII*, Houston, TX, February 10–13, 2020.

Service for Academic Journals

2023–	Subject Editor, *Nonlinear Dynamics*. https://www.springer.com/journal/11071/editors
2015–	Reviewer (average 25 papers per year): Mechanical Systems and Signal Processing, Journal of Sound and Vibration, ASME Journal of Vibration and Acoustics, Meccanica, International Journal of Non-Linear Mechanics, Nonlinear Dynamics, Journal of Engineering Mechanics, Communications in Nonlinear Science and Numerical Simulation, Digital Signal Processing, ASME Journal of Applied Mechanics, Energy, Chaos.

Professional Memberships

2019	4.	American Institute of Aeronautics and Astronautics, Associate Member, 2019–present
2015	3.	Society of Experimental Mechanics, Member, 2015-present.
2012	2.	American Society of Mechanical Engineers, Member, 2013-present.
2011	1.	Society of Automotive Engineers, Member, 2011-2013.