

PETER J. ATTAR

Associate Professor, School of Aerospace and Mechanical Engineering
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I. Education

PhD Mechanical/Materials Science Duke University, 2003
MS Mechanical/Materials Science Duke University, 2000
B.S. Mechanical Tufts University, 1997

II. Appointments

2012 – present Associate Professor, The University of Oklahoma
2006 - 2012 Assistant Professor, The University of Oklahoma
2004 - 2006 NRC Research Associate, AFRL/VAAC
2003 - 2004 Research Professor, Duke University
1997 Engineer, Raytheon Corporation

III. Teaching

A. Individual Student Guidance

In Progress

Ph.D.

1. Mani Razi (FA 2009). Thesis Research: Numerical methods related to solution of hyperbolic partial differential equations with application to computational uncertainty quantification. Co-advisor: Prakash Vedula.
2. Orhan Ozcelik (SP 2009). Thesis Research: Simulation and experiment of the nonlinear dynamics of flapping beams.

M.S.

None

Completed

Ph.D.

1. Allen Labryer (SU 2009 - FA 2012). Thesis Title: “Optimal Spatiotemporal Reduced Order Modeling for Nonlinear Dynamical Systems”. Co-Advisor: Prakash Vedula.

M.S.

1. Rezwan Jahangir (SP 2007 – FA 2008). Thesis Title: “Understanding Lamina Cribrosa Biomechanics Through Statistical Analysis and Finite Element Methods.”
2. Jordan Johnston (FA 2007 – SP 2009). Thesis Title: “Experimental Characterization of Limit Cycle Oscillations in the Membrane Wings of Micro Air Vehicles.” Co-Advisor: Ramkumar Parthasarathy.

3. Allen Labryer (FA 2007 – SP 2009). Thesis Title: “A Filtered High-Dimensional Harmonic Balance Method for Problems in Nonlinear Dynamics.”
4. Kedar Sapkal (FA 2008 – FA 2010). Thesis Title: “Flutter and LCO Analysis of a Composite Material Delta Wing Using a Reduced Order System Identification Approach.”
5. Brian Morris (SP 2010 – SP 2011). Thesis Title: “Experimental and Computational Study of Membrane-Wing Micro Air Vehicles.”
6. Micah Gee (FA 2008 – SU 2011). Thesis Title: “Computational Aeroelastic Investigation of a Membrane Airfoil Undergoing Figure of Eight Motion.” Started Fall 2008. Completed Summer 2011.
7. Kamaldeen Aleshinloye (FA 2010-SP 2013). Thesis Title: Experimental and Computational Characterization of the Gust Response of Membrane Wings”.

Undergraduates Supervised

1. William Romberg. Wind Tunnel Experiments for Membrane Micro Air Vehicles. Spring 2008-Spring 2009. Currently Engineer for Weatherford International, Houston, TX.
2. Brian Morris. Flutter and Limit Cycle Oscillation Computations for Membrane Micro Air Vehicles. Spring 2007-Spring 2009.
3. Andrew Carlile. On computational fluid-structure interaction modeling for tracheal stenosis. Fall 2009-Fall 2010.
4. Joel Langston. Wind tunnel gust generation. Summer 2009-Spring 2011. BSAE (with honors)
5. Bradley Perry. On computational modeling and uncertainty quantification for tracheal mechanics. Spring 2010-Spring 2012. BSME (with honors)

B. Other Teaching Activities

Courses Taught

AME5023: *Elastic Stress Analysis*.

AME3723: *Numerical Methods for Engineering Computation*.

AME3523: *Aerospace Structural Analysis*.

AME 5573: *Advanced Engineering Analysis*.

AME 2223: *Introduction to Aerospace Engineering*.

IV. Scholarly Accomplishments

A. Refereed Publications

Refereed Journal Publications

1. Attar, P.J., Dowell, E.H. and Tang, D.M., “A Theoretical and Experimental Investigation of the Effects of a Steady Angle of Attack on the Nonlinear Flutter of a Delta Wing Plate Model,” *Journal of Fluids and Structures*, Vol. 17, No. 2, 2003, pp. 243-259.
2. Tang, D.M., Li, Aiqin, Attar, P.J. and Dowell, E.H., "Reduced Order Dynamic Model for Polysaccharides Molecule Attached to an Atomic Force Microscope," *Journal of Computational Physics*, Vol. 201, No. 2, December 2004, pp. 723-752.

3. Attar, P.J., Dowell, E.H. and White, J.R., "Modeling the LCO of a Delta Wing Using a High Fidelity Structural Model," *Journal of Aircraft*, Vol. 42, No. 5, September-October 2005, pp. 1209-1217.
4. Attar, P.J. and Dowell, E.H., "A Reduced Order System ID Approach to the Modeling of Nonlinear Structural Behavior in Aeroelasticity," *Journal of Fluids and Structures*, Vol. 21, No. 5-7, 2005, pp 531-542.
5. Attar, P.J. and Gordnier, R.E., "Aeroelastic Prediction of the Limit Cycle Oscillations of a Cropped Delta Wing," *Journal of Fluids and Structures*, Vol. 22, No. 1, 2006, pp 45-58.
6. Attar, P.J and Dowell, E.H., "A Stochastic Analysis of the Limit Cycle Behavior of a Nonlinear Aeroelastic Model Using the Response Surface Method," *Journal of Aircraft*, Vol. 43, No. 4, July-August 2006, pp. 1044-1052.
7. Attar, P.J., Dowell, E.H., White, J.R., and Thomas, J.P., "A Reduced Order Nonlinear System Identification Methodology," *AIAA Journal*, Vol. 44, No. 8, August 2006, pp 1895-1904.
8. Tang, D.M, Attar, P.J., Li, Ai Qin and Dowell, E.H., "Complex Dynamics of a Pyranose Ring Structure Molecule Attached to an Atomic Force Microscope," *Nonlinear Dynamics*, Vol. 45, No. 3-4, August 2006, pp. 283-303.
9. Liu, L., Thomas, J.P., Dowell, E.H., Attar, P.J. and Hall, K.C., "A comparison of classical and high dimensional harmonic balance approaches for a Duffing oscillator," *Journal of Computational Physics*, Vol. 215, No. 1, June 2006, pp. 298-320.
10. Tang, D., Attar, P.J and Dowell, E.H., "Flutter/Limit Cycle Oscillation Analysis and Experiment for Wing-Store Model," *AIAA Journal*, Vol. 44, No. 7, July 2006, pp. 1662-1675.
11. Attar, P.J, "Choosing the Cantilevered Plate In-Plane Trial Functions in a Classical Rayleigh-Ritz Solution of von Karman's plate equations", *Journal of Aircraft*, Vol. 44, No. 2, 2007, pp. 654-661.
12. Attar, P.J., "Some Results for Approximate Strain and Rotation Tensor Formulations in Geometrically Nonlinear Reissner-Mindlin Plate Theory," *International Journal of Nonlinear Mechanics*, Vol. 43, No. 2, March 2008, pp. 81-99.
13. Attar, P.J., Dowell, E.H. and Tang, D., "Modeling the LCO of a Delta Wing with an External Store Using a High Fidelity Structural Model," *Journal of Aircraft*, Vol. 45, No. 3, 2008, pp. 1054-1061.
14. Attar, P.J., Gordnier, R.E. and Visbal, M.R., "Numerical Simulation of the Buffet of a Full Span Delta Wing at High Angle of Attack," *Journal of Aircraft*, Vol. 45, No. 3, 2008, pp. 857-867.
15. Attar, P.J., Vedula, P., "Direct Quadrature Method of Moments Solution of the Fokker-Planck Equation," *Journal of Sound and Vibration*, Vol. 317, No. 1-2, October 21 2008, pp. 265-272.
16. LaBryer, A.R. and Attar, P.J., "High Dimensional Harmonic Balance Dealiasing Techniques for a Duffing Oscillator," *Journal of Sound and Vibration*, Vol. 324, No. 3-5, 2009, pp. 1016-1038.
17. Attar, P.J. and Vedula, P., "Direct Quadrature Method of Moments Solution of the Fokker-Planck Equation for Stochastic Processes in Aeroelasticity," *AIAA Journal*, Vol. 47, No.5, May 2009, pp.1219-1227.
18. LaBryer, A. and Attar, P.J., "A Harmonic Balance Approach for Large-Scale Problems in Nonlinear Structural Dynamics," *Computers and Structures*, Vol. 88, No. 17-18, 2010, pp. 1002-1014.
19. Johnston, J.W., Romberg, W., Attar, P.J. and Parthasarathy, R., "Experimental Characterization of Limit Cycle Oscillations in Membrane Wing Micro Air Vehicles," *Journal of Aircraft*, Vol. 47, No. 4, July-August 2010, pp. 1300-1308.

20. Attar, P.J., Tang, D. and Dowell, E.H., "Nonlinear Aeroelastic Study for Folding Wing Structures," *AIAA Journal*, Vol. 48, No. 10, October 2010, pp. 2187-2195.
21. Attar, P.J., Gordnier, R.E., Johnston, J.W., Romberg, W.A., and Parthasarathy, R.N., "Aeroelastic Analysis of Membrane Micro Air Vehicles. Part 1: Flutter and Limit Cycle Analysis for Fixed-Wing Configurations," *ASME Journal of Vibration and Acoustics*, Vol. 133, No. 2, April 2011, pp. 021008-1-021008-8.
22. Attar, P.J., Gordnier, R.E., Johnston, J.W., Romberg, W.A., and Parthasarathy, R.N., "Aeroelastic Analysis of Membrane Micro Air Vehicles. Part 2: Computational Study of a Plunging Membrane Airfoil," *ASME Journal of Vibration and Acoustics*, Vol. 133, No. 2, April 2011, pp. 021009-1-021009-6.
23. Sapkal, K. and Attar, P.J., "Experimental and Computational Aeroelastic Analysis of a Composite Material Delta Wing in Low Subsonic Flow," *AIAA Journal*, Vol. 50, No. 1, Jan. 2012, pp. 162-175.
24. Attar, P.J., Romberg, W., Morris, B., Johnston, J., and Parthasarathy, R.N., "Fluid and Structural Dynamic Response of Membrane Micro Air Vehicles at Moderate to High Angle of Attack," *AIAA Journal*, Vol. 50, No. 7, July 2012, pp. 1525-1537.
25. LaBryer, A., Attar, P.J. and Vedula, P., "A Framework for Optimal Temporal Reduced Order Modeling of Nonlinear Dynamical Systems," *Journal of Sound and Vibration*, Vol. 332, No. 4, 2013, pp. 993-1010.
26. Attar, P.J. and Vedula, P., "On Convergence of Moments in Uncertainty Quantification Based on Direct Quadrature," *Reliability Engineering and System Safety*, Vol. 111, March 2013, pp. 119-125.
27. LaBryer, A., Attar, P.J. and Vedula, P., "An optimal prediction method for under-resolved time-marching and time-spectral schemes," *International Journal for Multiscale Computational Engineering*, Vol. 11, Issue 2, 2013, pp. 93-116.
28. LaBryer, A., Attar, P.J. and Vedula, P., "Optimal Spatiotemporal Reduced Order Modeling Part I: Proposed Framework," *Computational Mechanics*, Vol. 52, Issue 2, 2013, pp. 417-431.
29. LaBryer, A., Attar, P.J. and Vedula, P., "Optimal Spatiotemporal Reduced Order Modeling Part II: Application to a Nonlinear Beam," *Computational Mechanics*, Vol. 52, Issue 2, 2013, pp. 433-451.
30. Gordnier, R.E., Chimakurthi, S.K., Cesnik, C.E.S. and Attar, P.J., "High-fidelity aeroelastic computations of a flapping wing with spanwise flexibility," *Journal of Fluids and Structures*, Vol. 40, 2013, pp. 86-104.
31. Ozelik, O., Attar, P.J., Altan, M.C. and Johnston, J.W., "Experimental and Numerical Characterization of the Structural Dynamics of Flapping Beams," *Journal of Sound and Vibration*, Vol. 332, Issue 21, 2013, pp. 5393-5416.
32. LaBryer, A., Attar, P.J. and Vedula, P., "Characterization of Subgrid-Scale Dynamics for a Nonlinear Beam," *Computers and Structures*, Vol. 129, December 2013, pp. 13-29.
33. Attar, P.J., "Utilizing Pseudo-Time Framework in Harmonic Balance Methods for Aperiodic Problems," *AIAA Journal*, Vol. 51, Issue 12, 2013, pp. 2982-2987.
34. LaBryer, A., Attar, P.J. and Vedula, P., "Optimal spatiotemporal reduced order modeling of the viscous Burgers equation," *Finite Elements in Analysis and Design*, Vol. 79, 2014, pp. 40-52.
35. Gordnier, R.E. and Attar, P.J., "Impact of flexibility on the aerodynamics of an aspect ratio two membrane wing," *Journal of Fluids and Structures*, Vol. 45, February 2014, pp. 138-152.
36. Ozelik, O. and Attar, P.J., "Effect of nonlinear damping on the structural dynamics of flapping beams," *International Journal of Nonlinear Mechanics*, Vol. 65, October 2014, pp. 148-163.

Journal Articles Under Review

1. Razi, M., Attar, P.J. and Vedula, P., "Adaptive Finite Difference Solutions of Liouville Equations in Computational Uncertainty Quantification." Submitted (July 2013) to *Reliability Engineering and System Safety*.
2. Razi, M., Attar, P.J. and Vedula, P., "Uncertainty quantification of multidimensional dynamical systems based on adaptive numerical solutions of the Liouville equation." Submitted (November 2013) to *Probabilistic Engineering Mechanics*.
3. Razi, M., Attar, P.J. and Vedula, P., "Grid Adaptation and Non-Iterative Defect Correction for Improved Accuracy of Numerical Solutions of PDEs," Submitted (April 2014) to *Applied Mathematics and Computation*.

Articles in Refereed Conference Proceedings

1. Attar, P.J., Dowell, E.H. and Tang, D., "Modeling Aerodynamic Nonlinearities for Two
2. Aeroelastic Configurations: Delta Wing and Flapping Flag," AIAA Paper 2003-1402. Presented at the 2003 AIAA Structures, Structural Dynamics and Materials Conference, Norfolk, VA.
3. Attar, P.J., Dowell, E.H. & White, J.R., "Modeling the LCO of a Delta Wing Using a High Fidelity Structural Model," AIAA Paper 2004-1692. Presented at the 2004 Structures, Structural Dynamics and Materials Conference, Palm Springs, CA.
4. Attar, P.J. and Dowell, E.H., "A Stochastic Analysis of the Limit Cycle Behavior of a Nonlinear Aeroelastic Model Using the Response Surface Method," AIAA Paper 2005-1986. Presented at the 2005 Structures, Structural Dynamics and Materials Conference, Austin, TX.
5. Attar, P.J., Dowell, E.H. and Tang, D., "Modeling the LCO of a Delta Wing with an External Store Using a High Fidelity Structural Model," AIAA Paper 2004-1692. Presented at the 2005 AIAA Structures, Structural Dynamics and Materials Conference, Austin, TX.
6. Attar, P.J. and Gordnier, R.E., "Aeroelastic Prediction of the Limit Cycle Oscillations of a Cropped Delta Wing," AIAA Paper 2005-1915. Presented at the 2005 AIAA Structures, Structural Dynamics and Materials Conference, Austin, TX.
7. Attar, P.J. and Dowell, E.H., "A Reduced Order System ID Approach to the Modeling of Nonlinear Structural Behavior in Aeroelasticity," DETC2005-84309. Presented at the 2005 ASME IDETC Conference, Long Beach, CA.
8. Attar, P.J., Gordnier, R.E. and Visbal, M.R., "Numerical Simulation of the Buffet of a Full Span Delta Wing at High Angle of Attack," AIAA Paper 2006-2075. Presented at the 2006 AIAA Structures, Structural Dynamics and Materials Conference, Newport, RI.
9. Attar, P.J. and Gordnier, R.E., "Aeroelastic Modeling Using a Geometrically Nonlinear P-version Mixed Reissner-Mindlin Plate Element," AIAA Paper 2007-2318. Presented at the 48th AIAA Structures, Structural Dynamics and Materials Conference, Honolulu, HI.
10. Ferguson, L., Seshaiyer, P., Gordnier, R. and Attar, P.J., "Computational modeling of coupled membrane-beam flexible wings for micro air vehicles," AIAA Paper 2007-1787. Presented at the 48th AIAA Structures, Structural Dynamics and Materials Conference, Honolulu, HI.
11. Attar, P.J. and Gordnier, R.E., "Some Computational Aeroelastic Results for a Low Sweep Delta Wing at High Angle of Attack," (Invited) AIAA Paper 2008-617. Presented at the 2008 AIAA Aerospace Sciences Meeting and Exhibit.

12. Attar, P.J. and Vedula, P., "Direct Quadrature Method of Moments Solution of the Fokker-Planck Equation for Stochastic Processes in Aeroelasticity," AIAA Paper 2008-1986. Presented in the 10th AIAA Non-Deterministic Approaches Conference, Schaumburg, IL, April 7-10, 2008.
13. Gordnier, R.E. and Attar, P.J., "Implicit LES Simulations of a Low Reynolds Number Flexible Membrane Wing Airfoil," AIAA Paper 2009-579. Presented at the 47th AIAA Aerospace Sciences Meeting, Orlando, FL, Jan. 5-8 2009.
14. Attar, P.J., Tang, D. and Dowell, E.H., "Nonlinear Aeroelastic Study for Folding Wing Structures," MP-AVT-168-10. Presented at the NATO-RTA Symposium on Morphing Wings, April 20th, 2009, Evora Portugal.
15. Attar, P.J. and R.E. Gordnier, "High Fidelity Computational Aeroelastic Analysis of a Plunging Membrane Airfoil," AIAA Paper 2009-2472. Presented at the 50th AIAA Structures, Structural Dynamics and Materials Conference, Palm Springs, CA, May 4-7, 2009.
16. Labryer, A.R. and Attar, P.J., "Modeling the Nonlinear Structural Dynamics of a Membrane Airfoil using a High Dimensional Harmonic Balance Approach," AIAA Paper 2009-2474. Presented at the 50th AIAA Structures, Structural Dynamics and Materials Conference, Palm Springs, CA, May 4-7, 2009.
17. Attar, P.J., Gordnier, R.E., Johnston, J.W., Romberg, W.A. and Parthasarathy, R.N., "Aeroelastic Analysis of Membrane Micro Air Vehicles," FEDSM2009-78575. Proceedings of the ASME 2009 Fluids Engineering Division Summer Meeting, August 2-6, 2009, Vale, Colorado, USA.
18. Attar, P.J., Romberg, W., Johnston, J., Gordnier, R. and Parthasarathy, K., "Fluid and Structural Dynamic Response of Membrane Micro Air Vehicles at Moderate to High Angle of Attack," AIAA Paper 2010-2711. Presented at the 51st AIAA Structures, Structural Dynamics and Materials Conference, Orlando, FL, April 12-15, 2010.
19. Gordnier, R., P.J. Attar, Chimakurthi, S. and Cesnik, C., "Implicit LES Simulations of a Flexible Flapping Wing," AIAA Paper 2010-2960. Presented at the 51st AIAA Structures, Structural Dynamics and Materials Conference, Orlando FL, April 12-15, 2010.
20. Attar, P.J., Johnston, J.W., Romberg, W.A., Parthasarathy, R.N. and Morris, B.J., "A Characterization of Limit Cycle Oscillations in Membrane wing Micro Air Vehicles at Low Angle of Attack," FEDSM-ICNMM2010-30674. Presented at the 3rd Joint US-European Fluids Engineering Summer Meeting and 8th International Conference on Nanochannels, Microchannels, and Minichannels. August 1-5, 2010, Montreal, Canada.
21. Yoon, J., Attar, P.J. and Vedula, P., "Non-Intrusive Uncertainty Quantification for Hypersonic Flight Using Direct Quadrature," AIAA Paper 2010-8171. Presented at the AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario, Aug. 2-5, 2010.
22. Hu, P., Kamakoti, R., Xue, L., Wang, Z., Li, Q., Attar, P.J. and Vedula, P., "A Meshless Method for Aeroelastic Applications in ASTE-P Toolset," AIAA Paper 2010-7604. Presented at the AIAA Modeling and Simulation Technologies Conference, Toronto, Ontario, Aug. 2-5, 2010.
23. Kamakoti, R., Xue, L., Hu, P., Attar, P.J. and Vedula, P., "Harmonic Balance Methodology for Meshless Particle-Based Methods," AIAA Paper 2011-653. Presented at the 49th AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Orlando, FL, Jan. 4-7, 2011.
24. Gordnier, R., Chimakurthi, C. and Attar, P.J., "High-Fidelity Aeroelastic Computations of a Flapping Wing with Spanwise Flexibility," AIAA Paper 2011-570. Presented at the 49th AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Orlando, FL, Jan. 4-7, 2011.

25. Labryer, A., Attar, P.J. , and Vedula, P., “Optimal Temporal Reduced Order Modeling for Problems in Nonlinear Dynamics,” AIAA Paper 2011-2179. Presented at the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Denver, CO., April 7, 2011.
26. Razi, M., Attar, P.J., and Vedula, P., “Adaptive Numerical Solutions of Fokker-Planck Equations in Computational Uncertainty Quantification,” AIAA Paper 2011-1976. Presented at the 13th AIAA Non-Deterministic Approaches Conference, Denver, CO, April 6, 2011.
27. Sapkal, K. and Attar, P.J., “Composite material delta wing flutter and LCO analysis using a reduced order system ID approach,” AIAA Paper 2011-1743. Presented at the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Denver, CO, April 4, 2011.
28. Gee, M. and Attar, P.J., “High Fidelity Aeroelastic Simulation of a Membrane Airfoil Undergoing Figure-of-Eight Kinematics,” AIAA Paper 2011-1711. Presented at the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Denver, CO, April 4, 2011.
29. Ozcelik, O., Attar, P.J., and Altan, M.C., “Experimental and Computational Characterization of the Nonlinear Vibration Response of Plunging Beams,” AIAA Paper 2011-1775. Presented at the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Denver, CO, April 4, 2011.
30. Gordnier, R.E. and Attar, P.J., “Aeroelastic Simulations of an Aspect Ratio Two Flexible Membrane Wing,” AIAA Paper 2012-711. Presented at the 50th Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition, Nashville TN, Jan. 9-12, 2012.
31. Labryer, A.R., Attar, P.J. and Vedula, P.,”Subgrid-scale Dynamics for a Nonlinear Beam,” AIAA Paper 2012-1711. Presented at the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Honolulu, HI, April 23-26, 2012.
32. Gordnier, R.E. and Attar, P.J., “Impact of Flexibility on the Aerodynamics of an Aspect Ratio Two Membrane Wing,” FEDSM2012-72296. Presented at the ASME Fluids Engineering Summer Meeting, Puerto Rico, USA, July 8-12, 2012.
33. LaBryer, A., Attar, P.J. and Vedula, P., “Optimal Prediction of Lyapunov Exponents for a Duffing Oscillator,” in B.H.V. Topping, (Editor), “Proceedings of the Eleventh International Conference on Computational Structures Technology”, Civil-Comp Press, Stirlingshire, United Kingdom, Paper 253, 2012. DOI:10.4203/ccp.99.253.
34. LaBryer, A., Attar,P.J. and Vedula, P., “Optimal spatiotemporal reduced order modeling of Burgers equation with large-amplitude disturbances,” AIAA Paper 2013-0255. Presented at the 51st Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition, Grapevine TX, Jan. 7-10, 2013.
35. Razi, M., Attar, P.J. and Vedula, P., “Adaptive Numerical Solution of Liouville Equation For Uncertainty Quantification of Multidimensional Dynamical Systems,” AIAA Paper 2013-1536. Presented at the 54th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference and Co-located Events, Boston MA., April 8-11, 2013.

V. Service

A. Professional Contributions

Reviewer Work for Technical Journals:

AIAA Journal , *Journal of Aircraft*, *Journal of Sound and Vibration*, *ASME Journal of Vibration and Acoustics*, *International Journal for Non-linear Mechanics*, *Journal of Mechanics of Materials and Structures*, *Journal of Fluids and Structures*, *Journal of Aerospace Science and Technology*, *Experiments in Fluids*, *Journal of Intelligent Material Systems and Structures*, *Journal of Engineering Materials and Technology*, *Aircraft Engineering and Aerospace Technology*, *Engineering with Computers*, *Nonlinear Dynamics*

B. Campus Contributions

University of Oklahoma faculty advisor for student chapter of AIAA (2008-2010)
Chair, AME ad-hoc organizing committee for COE graduate symposium (spring 2010)
Member, AME director search committee (spring 2009)
Member, Aerospace undergraduate committee (since 2006)
Member, Graduate committee (since 2010)
Member, Ad-Hoc committee for Implementation of AME Strategic Plan Goal 1
Graduate Student Liaison (2012-present)

VI. Grants and Contracts

External Research Contracts

1. Design Intelligence Inc. (flow-through from AFOSR SBIR)
PI: M.C. Altan (33%), Co-PI's: P. J. Attar (33%) and F. Striz (33%)
Energy Harvesting for Small Air Vehicles
7/01/2007 - 6/30/2008, \$165,000
2. Ohio Aerospace Institute (flow-through from AFOSR)
PI: P.J. Attar
High Fidelity Computational Aeroelastic Analysis of a Flexible Membrane Airfoil Undergoing Dynamic Motion
5/15/2009 - 5/14/2010, \$35,269
3. Advanced Dynamics Inc. (flow-through from AFOSR STTR)
PI: P.J. Attar (50%) , Co-PI: P. Vedula
Novel, Optimal, Physics-based Reduced Order Models for Nonlinear Aeroelasticity
5/15/2009 - 3/14/2010, \$49,566
4. Ohio Aerospace Institute (flow-through from AFOSR)
PI: P.J. Attar
Computational Model Development and Experimental Validation Measurements for Membrane-Batten Wing
9/15/2009 - 3/31/2010, \$42,933
5. Advanced Dynamics (flow-through from NASA SBIR)
PI: P.J. Attar (50%) Co-PI: P. Vedula
Novel Reduced Order in Time Models for Problems in Nonlinear Aeroelasticity
1/29/2010 - 7/28/2010, \$29,019.
6. Ohio Aerospace Institute (flow-through from AFRL/AFOSR)
PI: P.J. Attar
High-Fidelity Computational Aeroelastic Solver Research
7/1/2010 - 9/30/2010, \$53,035.
7. Advanced Dynamics (flow-through from ONR)
PI: P.J. Attar (50%), Co-PI: P. Vedula
Deterministic and Statistical Characterization of the Impact of Control Surface Freeplay on Flutter and Limit-Cycle Oscillation (LCO) using Efficient Computational Modeling.

- 7/15/2010-1/14/2011, \$29,994
8. Advanced Dynamics (flow-through from NASA Phase I SBIR)
 PI: P.J. Attar (50%), Co-PI: P. Vedula
 High-Fidelity Computational Aeroelastic Models in Support of Certification
 Airworthiness of Control Surfaces with Freeplay and Other Nonlinear Features.
 2/18/2011-8/17/2011, \$9,109
 9. Advanced Dynamics (flow-through from NASA Phase I SBIR)
 PI: P.J. Attar (50%), Co-PI: P. Vedula
 Towards Better Modeling and Simulation of Nonlinear Aeroelasticity On and Beyond
 Transonic Regimes
 2/18/2011-8/17/2011, \$19,983
 10. Advanced Dynamics (flow-through from NASA Phase II SBIR)
 PI: P.J. Attar (50%), Co-PI: P. Vedula
 State-of-the-art, Multi-fidelity Modeling and Simulation (M&S) Tool for Nonlinear
 Aeroelasticity. 4/1/2011-3/30/2013, \$159,917.
 11. Ohio Aerospace Institute (flow-through from AFRL/AFOSR)
 PI: P.J. Attar (100%)
 Experimental Study of the Gust Response of Membrane Micro Air Vehicles
 12/6/2011-7/6/2012, \$51,896
 12. Ohio Aerospace Institute (flow-through from AFRL/AFOSR)
 PI: P.J. Attar (100%)
 Numerical Simulation of a Membrane Micro Air Vehicle in a Gust Field
 9/1/2012-5/31/2012, \$35,400
 13. NSF (standard)
 PI: P.J. Attar (50%), Co-PI: P. Vedula (50%)
 Optimal Spatiotemporal Reduced Order Modeling for Nonlinear Structural Dynamics
 9/1/2013-8/31/2016, \$360,682
 14. NSF(Continuing)
 PI: P. Vedula (50%), Co-PI: P.J. Attar (50%)
 Fast simulations of turbulent flows based on spatiotemporal statistical information.
 9/1/2013-8/31/2016, \$330,000

Internal Grants

1. University of Oklahoma Research Council
 PI: P.J. Attar
 Experimental Investigations of Micro Air Vehicle Aeroelasticity
 9/15/2010 – 9/14/2009 \$5360

VII. Honors and Awards

Awards: Student

1. PhD student Allen LaBryer (first author, co-authors P.J. Attar and P. Vedula) was awarded the Jefferson Goblet for the best student paper in the 2012 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference.
2. PhD student Allen LaBryer won the 2012 K.J. Bathe Award for the Best Paper by a Young Researcher in the Field of Computational Engineering published in the International Journal Computers & Structures during 2010-2011 for the paper titled “A Harmonic Balance Approach for Large-Scale Problems in Nonlinear Structural Dynamics”. P.J. Attar was co-author.

3. PhD student (Co-Advisor Prakash Vedula) Allen LaBryer was awarded the University of Oklahoma outstanding dissertation in Science and Engineering for his thesis titled “Optimal Spatiotemporal Reduced Order Modeling for Nonlinear Dynamical Systems.”
4. PhD student Allen LaBryer was named as one of six finalists for the 2013 Melosh Competition.