

## CURRICULUM VITA

Joseph C. Slater, Ph.D., P.E.

Department of Mechanical and Materials Engineering

Wright State University

Dayton, OH 45435

### I Education

State University of New York at Buffalo, Aerospace Engineering, B.S., 1989

State University of New York at Buffalo, Aerospace Engineering, M.S., *Modeling of Non-proportional Frequency Dependent Viscoelastic Damping in Space Structures*, 1992

State University of New York at Buffalo, Mechanical Engineering, Ph.D., *Nonlinear Modal Control*, 1993

### II Professional Experience

<u>Institution</u>	<u>Position</u>	<u>Dates</u>
Professor	Wright State University	9/08-Present
Associate Professor	Wright State University	9/99-8/08
Assistant Professor	Wright State University	9/93-8/99
State University of New York at Buffalo	Postdoctoral Research Assistant	6/93-8/93
State University of New York at Buffalo	Research Assistant	6/89-5/93

### III Professional Memberships

- American Institute of Aeronautics and Astronautics, Associate Fellow
- Society for Experimental Mechanics, Member
- American Society of Mechanical Engineers, Member

## IV Honors and Awards

<u>Organization</u>	<u>Award</u>	<u>Dates</u>
SUNY Buffalo	Presidential Fellowship	1989-1993
NASA Langley	Graduate Fellowship	1989-1992
Wright Lab	Summer Faculty Fellowship	6/94-9/94
Wright Lab	Summer Faculty Fellowship	6/95-9/95
Phillips Lab	Summer Faculty Fellowship	6/96-9/96
Wright State University, College of Engineering & Computer Science	Outstanding Teaching Award Finalist	1999
Wright Lab	Summer Faculty Fellowship	6/99-9/99
Wright Lab	Summer Faculty Fellowship	6/00-9/00
AIAA	Associate Fellow	2001
Ohio	Professional Engineer License	2002
Wright State University, College of Engineering & Computer Science	Outstanding Teaching Award Finalist	2004
Wright State University, College of Engineering & Computer Science	Nominee for Wright State University Distinguished Professor of Service	2005
Wright State University, College of Engineering & Computer Science	Faculty Service Award	2006
Wright State University, College of Engineering & Computer Science	Outstanding Teaching Award Finalist	2007
DARPA	Certificate of Award for outstanding contributions to the ISAT program	8/2007

## V Scholarship

### 1 Printed Scholarship

#### *i Books*

1. Curtis, J.D., Inman, D.J., Leo, D.J., Rietz, R.W., Slater, J.C., *Solutions Manual for Engineering Vibration*, Chapter 8, Prentice Hall, New York, 1993.

#### *ii Journal Publications Submitted (all peer reviewed)*

1. Maddux, M, and Slater, J.C., "Potential Destabilization of Simulations Due To Proper Orthogonal Decomposition Reduced-Order Modeling," *International Journal for Numerical Methods in Engineering*, May 2007, NME-May-07-0276.
2. Penmetsa, R., Khambaswadkar, R., and Slater, J., "Acoustic Optimization of an Underwater Vehicle Involving Fluid-Structure Interaction," *Naval Engineers Journal*, Sept. 2007.
3. Shiryayev, O.V., and Slater, J.C., "Detection of Linear and Nonlinear Stiffness Changes Using Random Decrement Signatures," *International Journal of Structural Health Monitoring*, May 2007.

#### *iii Journal Publications Accepted (In press, all peer reviewed)*

#### *iv Journal Papers Published (all peer reviewed)*

1. Shiryayev, O. and Slater, J., "Improved Structural Health Monitoring Using Random Decrement Signatures: Application to FEM Data," *Structural Control and Health Monitoring*, Vol. 15, No.

- 7, November 2008, pp. 1006-1020.
2. Balagangadhar, R. and Slater, J. C., "On the Convergence of Nonlinear Modes of a Finite Element Model," *Shock and Vibration*, Vol. 15, No. 6, 2008, pp. 655-664.
  3. Shiryayev, O.V., Page, S.M., Pettit, C. L., and Slater, J.C., "Parameter estimation and investigation of a bolted joint model," *Journal of Sound and Vibration*, Vol. 307, No. 3-5, 2007, pp. 680-697.
  4. Shiryayev, O.V., and Slater, J.C., "Aeroelastic System Identification Using the Minimum Model Error Method," *AIAA Journal of Guidance, Control, and Dynamics*, Vol. 29, No. 4, July-August 2006, pp. 936-943.
  5. Shiryayev, O.V., and Slater, J.C., "Panel Flutter Model Identification Using the Minimum Model Error Method on the Forced Response Measurements," *ASME Journal of Vibration and Acoustics*, Vol. 128, No. 5, October 2006, pp. 635-645.
  6. Mortara, S.A., Slater, J.C., and Beran, P.S., "Analysis of Nonlinear Aeroelastic Panel Response Using Proper Orthogonal Decomposition," *ASME Journal of Vibration and Acoustics*, Vol. 126, pp. 416-421, No. 3, July 2004.
  7. Slater, J.C., Pettit, C.L., and Beran, P.S., "In-Situ Residual Tracking in Reduced Order Modeling," *Journal of Shock and Vibration*, Vol. 9, No. 3, pp. 105-121, 2002.
  8. Slater, J.C., "Application of a the Nyquist Stability Criteria on the Nichols Chart," *AIAA Journal of Guidance, Control, and Dynamics*, 22: (2), pp. 360-362, MAR-APR, 1999.
  9. Slater, J.C., Minkiewicz, G.R., and Blair, A.J., "Forced Response of Bladed Disk Assemblies - A Survey," *The Shock and Vibration Digest: Center for Intelligent Materials Systems and Structures*, Vol. 31, No. 1, Jan, 1999, pp. 17-24.
  10. Wang, Y., and Slater, J.C., "A Comparison of Conventional and Impedance Methods for Modeling Piezoelectric Materials Actuation in Smart Structures," *Journal of Vibration and Acoustics*, Vol. 120, pp. 685-688, July 1998.
  11. Slater, J.C., and Inman, D.J., "On the Effect of Weak Non-Linearities on Linear Controllability and Observability Norms, an Invariant Manifold Approach," *Journal of Sound and Vibration*, Vol. 199, No. 3, pp. 417-429, 1997.
  12. Slater, J.C., "A Numerical Method for Determining Nonlinear Normal Modes," *Nonlinear Dynamics*, Vol. 10, No. 1, pp. 19-30, 1996.
  13. Schulz, M.J., Thygarajan, S.K., and Slater, J.C., "Inverse Dynamic Design Technique for Flexible Structures," *AIAA Journal*, Vol. 33, No. 8, 1995, pp. 1486-1491.
  14. Slater, J.C., and Inman, D.J., "Nonlinear Modal Control Method," *AIAA Journal of Guidance Control and Dynamics*, Vol. 18, No. 3, 1995, pp. 433-440.
  15. Banks, H.T., Wang, Y., Inman, D.J., and Slater, J.C., "Approximation and Parameter Identification for Damped Second Order Systems With Unbounded Input Operators," *Control: Theory and Advanced Technology*, Vol. 10, No. 4, Part 1, Dec 1994, pp. 873-892.
  16. Slater, J.C., and Inman, D.J., "Transfer Function Modeling of Damping Mechanisms in Distributed Parameter Models," *Mechanics Research Communications*, Vol. 20, July-Aug, 1993, pp. 287-292.

## v Chapters

1. Slater, J.C., and Agnes, G., "Nonlinear Modal Control Techniques and Applications in Structural Dynamic Systems," *Structural Dynamic Systems, Computational Techniques and Optimization: Dynamic Analysis and Control Techniques*, C.T. Leondis, Ed., Gordon and Breach, NY, 1999.

vi *Papers Submitted for Conference Proceedings*

1. Meier, M., Shiryayev, O.V., and Slater, J.C., "Investigation of Candidate Features For Crack Detection in Fan and Turbine Blades and Disks," 50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference.
2. Shiryayev, O.V. and Slater, J.C., "Supplemental Investigations on Structural Damage Detection Using Randomdec Signatures from Experimental Data," 50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference.

vii *Papers in Published Proceedings*

1. Shiryayev, O.V. and Slater, J.C., "Structural Damage Identification Using Random Decrement Signatures From Experimental Data," 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference.
2. Slater, J.C., "Making Math and Science Exciting Through Engineering Sport: the Wright State University Trebuchet Competition," ASEE National Conference, June 2008.
3. Slater, J.C., "Outreach Through Sport: the Wright State University Trebuchet Competition," ASEE-NCS Conference, March 2008.
4. B. Kirby, C. Byers, S. Mascarella, T. Pestak, J. Bishop, K. Yelamarthi, M. Wolff, J. Slater, P. R. Mawasha, Z. Wu, "Engineering Research in Space using a High Altitude Balloon: an Interdisciplinary Senior Design Project," ASEE-NCS Conference, March 2007.
5. Nicholson, B., Page, S., Dong, H., and Slater, J.C., "Design of a flapping quad-winged micro air vehicle," 37th AIAA Fluid Dynamics Conference and Exhibit, no. AIAA-2007-4337, AIAA, June 2007.
6. Shiryayev, O.V. and Slater, J.C., "Improved Structural Damage Identification Using Random Decrement," AIAA-2007-2056, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, pp. 3561-3575.
7. Page, S., Shiryayev, O.V., Slater, J., and Pettit, C., "Experimentally Quantifying the Dynamic Response of Bolted Lap Joints," AIAA-2006-1657, 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, pp. 728-739, April 2006.
8. Shiryayev, O.V. and Slater, J.C., "Application of the Random Decrement Technique to a Nonlinear Dynamic System," AIAA-2006-1883, 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, pp. 3561-3575.
9. Shiryayev, O.V. and Slater, J.C., "Effects of Proper Orthogonal Decomposition on Identification Using the Minimum Model Error Algorithm," AIAA-2006-2036, 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, pp. 5349-5360, April 2006.
10. Pettit, C., Shiryayev, O.V., Page, S., and Slater, J., "Parameter Identification and Investigation of a Bolted Joint Model," AIAA-2005-2378, 46th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, April 2006.
11. Valevate, A., Slater, J.C., Menart, J.A., Cross, C.J., and George, T., "Semi-Active Vibration Control of Fan Blades," 9th National Turbine Engine High Cycle Fatigue Conference, March 2004.
12. Page, S., Shiryayev, O.V., Slater, J., and Pettit, C., "Measurements and Modeling of Variability in the Dynamics of a Bolted Joint," *9th Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability*, ASCE, Albuquerque, NM, July 26-28, 2004.
13. Pettit, C., Slater, J.C., Shiryayev, O.V., and Page, S., "Measurements and Modeling of Variability in the Dynamics of a Bolted Joint," AIAA-2004-1622, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, Palm Springs, CA, April, 2004.
14. Cobb, R., and Slater, J., "Development and Test of a Rigidizable Inflatable Structure Experi-

- ment,” AIAA-2004-1666, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, Palm Springs, CA, 2004.
15. Shiryayev, O.V., and Slater, J.C., “Panel Flutter Model Identification Using the Minimum Model Error. Part 1: Free Response,” AIAA-2004-1852, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, Palm Springs, CA, April, 2004.
  16. Shiryayev, O.V., and Slater, J.C., “Panel Flutter Model Identification Using the Minimum Model Error. Part 2: Forced Response,” AIAA-2004-1852, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, Palm Springs, CA, April, 2004.
  17. Shiryayev, O.V., Slater, J.C., George, T., and Cross, C.J., “Control of Resonant Fatigue Tests in the Existence of Bifurcations,” ISABE August 31- September 5, 2003, Cleveland, OH, page 156, ISABE-2003-1193.
  18. Brown, J.M, Slater, J.C., and Grandhi, R.V., “Probabilistic Analysis of Geometric Uncertainty Effects on Blade Modal Response,” 2003 ASME Turbo Expo. Atlanta, GA, June 16-19, 2003, GT2003-38557.
  19. Shiryayev, O.V. and Slater, J.C., Control of Resonant Fatigue Tests in the Existence of Bifurcations, 8th National Turbine Engine High Cycle Fatigue (HCF) Conference, April 2003.
  20. Slater, J.C., Pettit, C. and Beran, P.S., “In-Situ Subspace Evaluation in Reduced Order Modeling,” 42nd Structures, Structural Dynamics, and Materials Conference, Seattle, Washington, 2001.
  21. Gopinathan A., Mortara S.A., and Slater J.C., “Limit Cycle Oscillation Model Identification Using the Minimum Model Error Method”, ISMA 25: International Conference on Noise and Vibration Engineering, September 13-15, Leuven, Belgium, pp. 553-560, 2000.
  22. Mortara, S.A., Slater, J.C., and Beran, P.S., “A Proper Orthogonal Decomposition Technique for the Computation of Nonlinear Panel Response,” 41st Structures, Structural Dynamics, and Materials Conference, Atlanta, Georgia, 2000, AIAA-2000-1396.
  23. Slater, J.C., Minkiewicz, G.R., and Blair, A.J., “Forced Response of Bladed Disk Assemblies A Survey,” *Proceedings of the 34th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, July, 1998, AIAA paper number 98-3743, Cleveland, OH.
  24. Blair, A., and Slater, J.C., “Minimizing Sensitivity of Bladed Disks to Mistuning,” *Proceedings of the 16th International Modal Analysis Conference*, Vol. 1, 1998, SEM, Bethel, CT, USA. p 284-290.
  25. Balagangadhar, R., and Slater, J.C., “On the Convergence of Nonlinear Modes in a Finite Element Model,” *Proceedings of the 16th International Modal Analysis Conference*, Vol. 2, 1998, SEM, Bethel, CT, USA. p 1460-1466.
  26. Robertson, L., Leitner, J., Slater, J., deBlonk, B., “Integrated Modeling and Control of the ULTRA-LITE System,” *IEEE Aerospace Conference*, Vol. 2, Feb. 1997, pp. 337-355.
  27. Slater, J.C., “An Optimization Based Technique for Determining Nonlinear Normal Modes,” *1996 ASME International Congress and Exposition*, v 93, p 399-407.
  28. Leo, D.J., Slater, J.C., “Active/Passive Controller Synthesis based on H Power Flow Techniques,” *1995 North American Conference on Smart Structures and Materials*, SPIE Vol. 2442, Feb. 1995, pp. 256-267.
  29. Thygarajan, S.K., Schulz, M.J., and Slater, J.C., “Inverse Dynamic Design Technique for Flexible Structures,” *First Industry/Academy Symposium on Research For Future Supersonic and Hypersonic Vehicles*, Vol. 1, pp. 408-413.
  30. Slater, J.C., and Inman, D.J., “Extension Of Modal Analysis To Nonlinear Systems,” *Proceedings of the 12th International Modal Analysis Conference*, 1994.
  31. Slater, J.C., and Inman, D.J., “Forced Response of Nonlinear Systems for Modal Control,” *ASME Applied Mechanics Summer Meeting, Recent Developments in Stability, Vibration and Control of Structural Systems*, ed. A.Guran, ASME AMD Vol. 167, June 1993.

32. Slater, J.C., Belvin, W.K., and Inman, D.J., "A Survey of Modern Methods for Modeling Frequency Dependent Damping in Finite Element Models," *Proceedings of the 11th International Modal Analysis Conference*, Vol. 1923, pt. 2, pp 1508-1512, 1993.
33. Slater, J.C., and Inman, D.J., "Transfer Function Modeling of Damping Mechanisms in Distributed Parameter Models," *5th NASA Workshop on Distributed Parameter Modeling and Control of Flexible Space Structures*, June 1992.
34. Banks, H.T., Wang, Y., Inman, D.J., and Slater, J.C., "Variable Coefficient Distributed Parameter System Models For Structures With Piezoceramic Actuators and Sensors," *Proceedings of the 31st Conference on Decision and Control*, 1992, pp. 2535-2539.
35. Slater, J.C., Belvin, W.K., and Inman, D.J., "A Comparison of Viscoelastic Damping Models," *Fifth NASA/DOD Controls-Structures Interaction Technology Conference*, Mar. 1992, pp. 251-262.
36. Slater, J.C., and Inman, D.J., "Transfer Function Modeling of Damping Mechanisms in Viscoelastic Plates," *32nd Structures, Structural Dynamics, and Materials Conference*, Apr. 1991, pp. 2381-2383.
37. Slater, J.C., Inman, D.J., and Belvin, W.K., "Modeling of Constrained Layer Damping in Trusses," *Proceedings of Damping '91*, 1991, pp. ECC.

## **2 Presentations (without paper) Authored and Presented at Professional Conferences**

1. K. Yelamarthi, P. R. Mawasha, M. Wolff, J. Slater, and Z. Wu, "Wright State University High Altitude Balloon Project," The Great Midwestern Space Grant Region's Small Balloon Conference, September 2006.
2. Shiryayev, O.V. and Slater, J.C., "Improved Structural Health Monitoring Using the Randomdec Signatures," 2nd Annual Dayton Engineering Sciences Symposium, presentation DESS06-0012, October 31, 2006.
3. Anisetti, A, Page, S, and Slater, J., "Suppressing Structural Response using Piezoelectric Patches," 2nd Annual Dayton Engineering Sciences Symposium, presentation DESS06-0058, October 31, 2006.
4. Page, S., Shiryayev, O, and Slater, J.C., "Investigation into Bolted Joint Dynamics," 2nd Annual Dayton Engineering Sciences Symposium, presentation DESS06-0070, October 31, 2006.
5. Esperanza, C., Page, S., and Slater, J.C., "Investigation of Vibrational Behavior Control Using Magneto-Rheological Fluids," 2nd Annual Dayton Engineering Sciences Symposium, presentation DESS06-0071, October 31, 2006.
6. Maddux, M., and Slater, J.C., "Using In-Situ Error Tracking For Mode Selection in Proper Orthogonal Decomposition Reduced Order Modelling," 2nd Annual Dayton Engineering Sciences Symposium, presentation DESS06-0102, October 31, 2006.
7. Shiryayev, O.V., Wolff, J.M., and Slater, J.C., "Power Extraction From Turbine Engines - Numerical Simulations," 2nd Annual Dayton Engineering Sciences Symposium, presentation DESS06-0032, October 31, 2006.
8. El-Ashry, M, Slater, J.C., Young, D, and Seetharaman, G., "3-D displays Based on Deformable Polydimethylsiloxane (PDMS) Lenticulars," *Materials Science & Technology 2005 Conference and Exhibition*, ASM/ACerS/AWS/AIST/TMS, Sept. 25-28, Pittsburg, PA.
9. Wang, Y., and Slater, J.C., "Analysis of Piezoelectric Actuators Using a PDE Model," *1995 ASME Design Technical Conference*.

### **3 Presentations (without papers) given since 2000**

1. Slater, J.C., Shiryayev, O.V., and Page, S., "Structural Damping and Joints - Guessing is No Longer an Option," Dayton chapter of the Society of Tribology and Lubrication Engineers, Jan. 11, 2006.
2. Page, S., Shiryayev, O.V., Slater, J., and Pettit, C., "Measurements and Modeling of Variability in the Dynamics of a Bolted Joint," *9th Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability*, ASCE, Albuquerque, NM, July 26-28, 2004.
3. Valevate, A., and Slater, J.C., "Semi-Active Vibration Control of Fan Blades," AIAA/ICAS International Air and Space Symposium and Exposition: The Next 100 Years, Poster presentation. 14-17 July 2003, Dayton, OH.
4. Shiryayev, O.V., and Slater, J.C., and Cross, C.J., "Control of Resonant Fatigue Tests in the Existence of Bifurcations," AIAA/ICAS International Air and Space Symposium and Exposition: The Next 100 Years, Poster presentation. 14-17 July 2003, Dayton, OH.
5. Shiryayev, O.V., Slater, J.C., George, T., and Cross, C.J., "Control of Resonant Fatigue Tests in the Existence of Bifurcations," ISABE August 31 September 5, 2003, Cleveland, OH.
6. Shiryayev, O.V., Slater, J.C., and Cross, C.J., "Control of Resonant Fatigue Tests in the Existence of Bifurcations," High Cycle Fatigue Conference, 14-16 April 2003, Monterey CA.
7. Shiryayev, O.V., Slater, J.C., "Limit Cycle Oscillation Model Identification Using the Minimum Model Error Method," AIAA/ICAS International Air and Space Symposium and Exposition: The Next 100 Years, Poster presentation. 14-17 July 2003, Dayton, OH.
8. Slater, J.C., Pettit, C. and Beran, P.S., "In-Situ Subspace Evaluation in Reduced Order Modeling," 42nd Structures, Structural Dynamics, and Materials Conference, Seattle, Washington, 2001.
9. Mortara, S.A., Slater, J.C., and Beran, P.S., "Computation of Nonlinear Viscous Panel Flutter Using Reduced Order Modeling," 41st Structures, Structural Dynamics, and Materials Conference, Atlanta, Georgia, 2000.
10. Slater, J.C. and Sankarlal, S., "Blade Frequency Calculation For Tuned Aeroelastic Analysis," 25th Annual Dayton-Cincinnati Aerospace Science Symposium, March 30, 2000.
11. Gopinathan, A., Mortara, S. and Slater, J.C., "Limit Cycle Oscillation Model Identification Using the Minimum Model Error Method," 25th Annual Dayton-Cincinnati Aerospace Science Symposium, March 30, 2000.
12. Slater, J.C., "In-Situ Subspace Evaluation in Reduced Order Modeling," AFRL/VA, 2000.

### **4 Presentations given by student advisees since 2000**

1. Nicholson, B., Page, S, Dong, H., and Slater, J.C., "Wing Design And Testing For A Flapping, Quad-Winged Micro Air Vehicle," 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March, 2007, presented by Nicholson.
2. Shiryayev, O.V. and Slater, J.C., "Structural Health Monitoring Using Randomdec Signatures: Application To Fem Data," 32nd Annual Dayton-Cincinnati Aerospace Science Symposium, March, 2007, presented by Shiryayev.
3. Nicholson, B., Page, S, Dong, H., and Slater, J.C., "Design of a flapping quad-winged micro air vehicle," 37th AIAA Fluid Dynamics Conference and Exhibit, no. AIAA-2007-4337, AIAA, June 2007, presented by Nicholson.
4. Shiryayev, O.V. and Slater, J.C., "Improved Structural Health Monitoring Using the Randomdec Signatures," 2nd Annual Dayton Engineering Sciences Symposium, October 2006. Presented by O. Shiryayev.
5. Shiryayev, O.V., Wolff, M. and Slater, J.C., "Power Extraction From Turbine Engines - Numerical

- Simulations,” 2nd Annual Dayton Engineering Sciences Symposium, October 2006. Presented by O. Shiryayev.
6. Esperanza, C., Page, S., and Slater, J.C., “Investigation of Vibrational Behavior Control Using Magneto-Rheological Fluids,” 2nd Annual Dayton Engineering Sciences Symposium, October 2006. Presented by Esperanza.
  7. Maddux, M., “Using In-Situ Error Tracking For Mode Selection in Proper Orthogonal Decomposition Reduced Order Modeling,” 2nd Annual Dayton Engineering Sciences Symposium, October 2006.
  8. Page, S.M., Shiryayev, O.V., and Slater, J.C., “Investigation into Bolted Joint Dynamics,” 2nd Annual Dayton Engineering Sciences Symposium, October 2006. Presented by S.M Page.
  9. Corbett, M., Williams, J., and Holtkamp, J., “Design of a High Altitude Balloon Payload,” 2nd Annual Dayton Engineering Sciences Symposium, October 2006.
  10. Shiryayev, O.V., Wolff, J.M. and Slater, J.C., “Turbine Engine Modeling,” 31st Dayton-Cincinnati Aerospace Sciences Symposium, March, 2006.
  11. Shiryayev, O.V. and Slater, J.C., “Sensor Effects on Identification Using the Minimum Model Error Algorithm,” 31st Dayton-Cincinnati Aerospace Sciences Symposium, March, 2006.
  12. Corbett, M, Williams, J., Walters, E., Lamm, P., Wolff, J.M. and Slater, J.C., “Analysis and Testing of Low Pressure Turbine Power Extraction Systems,” 31st Dayton-Cincinnati Aerospace Sciences Symposium, March, 2006.
  13. Holtkamp, J.C., Williams, J.M., and Corbett, M, “Design of High Altitude Balloon,” 31st Dayton-Cincinnati Aerospace Sciences Symposium, March, 2006.
  14. Corbett, “High Altitude Balloon Flight Path Prediction,” 31st Dayton-Cincinnati Aerospace Sciences Symposium, March, 2006.
  15. Page, S.M., Shiryayev, O.V., Slater, J.C., and Pettit, “Response Variability of a Bolted Joint,” 31st Dayton-Cincinnati Aerospace Sciences Symposium, March, 2006.
  16. Shiryayev, O.V., and Page, S.M, and Slater, J.C. and Pettit, C.L., “Study of a Bolted Joint Model,” 30th Dayton-Cincinnati Aerospace Sciences Symposium, February, 2005.
  17. Valevate, A.V., Slater, J.C. and Menart, J.A., “Semi-Active Vibration Control of Fan Blades,” 29th Dayton-Cincinnati Aerospace Sciences Symposium, March, 2004.
  18. Shiryayev, O.V. and Slater, J.C., “Investigation of the Appropriate Excitation for Identification of Nonlinear Distributed Parameter Systems Using the Minimum Model Error Method,” 29th Dayton-Cincinnati Aerospace Sciences Symposium, March, 2004.
  19. Mortara, S., Slater, J.C., and Beran, P., “A Solution To The Nonlinear Flutter Problem Using Proper Orthogonal Decomposition,” 25th Annual Dayton-Cincinnati Aerospace Science Symposium, March 30, 2000.
  20. Meyer, A., Schrinner, A., Taphorn, A. and Slater, J.C., “Forced Response Testing System,” 25th Annual Dayton-Cincinnati Aerospace Science Symposium, March 30, 2000.

## **5 Published Software - technical**

[www.cs.wright.edu/~jslater/software.shtml](http://www.cs.wright.edu/~jslater/software.shtml)

1. Slater, J.C., “Engineering Vibration Toolbox for Matlab 7.x,” 2006, for use with *Engineering Vibration*, Prentice Hall.
2. Slater, J.C., “Engineering Vibration Toolbox for Matlab 6.x,” 2002, for use with *Engineering Vibration*, Prentice Hall,.
3. Slater, J.C., “Engineering Vibration Toolbox, 2nd Edition,” *Engineering Vibration*, Prentice Hall,

New York, 1995.<sup>1</sup>

4. Slater, J.C., and Leo, D.J., "Vibration Toolbox," *Engineering Vibration*, Prentice Hall, New York, 1993.
5. Slater, J.C., and Leitner, J.A., *ctrl.m and obsv.m of the MATLAB Controls Toolbox*, 1996.

## VI Funded Grants and Contracts

1. Mawasha, P. R., Slater, J.C., Wolff, J.M., and Wu, Z., "Enhancing Integrated Technology and Interdisciplinary Based Engineering Education Through the High Altitude Balloon (HAB) Experience," NSF, \$147,568, 9/08-8/11.
2. Shiryayev, O.V. and Slater, J.C., "Investigation of Candidate Features for Crack Detection in Fan and Turbine Disks," UTC, \$48,496, 8/08-11/08.
3. Slater, J.C., "Vibration Control of Turbo-machinery Blade Vibration," UTC/AFRL, \$40,000, 8/08-11/08.
4. Meier, M. and Slater, J.C., "Crack Detection in Blades Using Random Decrement Signatures From Experimental Data," DAGSI, \$56,720, 3/08-3/09.
5. Mawasha, P. Ruby, Wolff, J. Mitch, and Slater, Joseph C., "Student BalloonSat Program," Ohio Space Grant Consortium, \$10,000, 4/06-4/07.
6. Wolff, J. Mitch, and Slater, J.C., "Engine Health Monitoring via Dynamics Engine Model Failure Diagnostics," PCKA/AFRL, \$52,000, 7/13/06-7/12/07.
7. Slater, Joseph C., "Semi-Active Vibration Control of Fan Blades," UTC/AFRL, \$25,000, 5/1/06-6/30/07.
8. Slater, Joseph C., "ISAT Government SEIT Structures Reference Designs and Analytical Models," SAIC/DARPA, \$11,529, 9/13/04-6/30/06.
9. Slater, Joseph C., "Turbine Engine Modeling," PCKA, \$8,500, 1/12/05-2/28/06.
10. Slater, Joseph C., Menart, J.A., "Semi-Active Vibration Control of Fan Blades," UTC, \$25,000, 6/1/05-5/31/06.
11. Slater, Joseph C., "ISAT Government SEIT Structures Reference Designs and Analytical Models," SAIC, \$944, 9/13/04-9/30/05.
12. Slater, Joseph C., "ISAT Government SEIT Structures Reference Designs and Analytical Models," SAIC, \$18,289, 9/13/04-6/30/06.
13. Wolff, J. Mitch and Slater, J.C., "Power Extraction from a Gas Turbine Engine in Flight," PCKA, \$65,717, 4/1/05-6/30/06.
14. Slater, J.C., "ISAT Government SEIT Structures Reference Designs and Analytical Models," SAIC, \$12,957, 12/01/04-3/31/05.
15. Slater, J.C., "ISAT Government SEIT Structures Reference Designs and Analytical Models," SAIC, \$13,958, 9/01/04-3/31/05.
16. Wolff, J.M. and Slater, J.C., "Power Extraction from a Gas Turbine Engine in Flight," PCKA, \$70,000, 4/9/04-12/24/05.
17. Slater, J.C., "Quantifying Uncertainty in Structural Response," Anteon (AFRL/V/AFOSR), \$156,825, \$129,225 spent before early termination, 10/01/02-9/30/04.
18. Slater, J.C. and Wolff, J.M., "Parallel Reduced-Order, Modeling/In Situ Error Correction in CFD," NSF, 6/1/03-5/31/04, \$25,740.
19. Slater, J.C., "Validation and Enhancement to Wildcat - POD, AFRL/UTC", 6/15/03-12/31/03, \$12,870.
20. Slater, J.C., "Semi-Active Control of Fan Blades, Phase 3," AFRL/UTC, 1/1/04-12/31/04, \$24,986.
21. Slater, J.C., "Semi-Active Control of Fan Blades, Phase 2," AFRL/UTC, 6/02/03-12/31/03,

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<sup>1</sup>Name was changed to resolve confusion with another toolbox with a similar name

- \$15,876.
22. Slater, J.C., "Semi-Active Control of Fan Blades," AFRL/UTC, \$9,192, 3/15/03-6/15/03.
  23. Slater, J.C., "Intergovernmental Personnel Agreement," AFIT, \$23,980, 6/02.
  24. Slater, J.C., "Intergovernmental Personnel Agreement," AFIT, \$18,430, 9/02-12/02.
  25. Slater, J.C., "P-POD: A Python-Based Generic Proper Orthogonal Decomposition Simulation Control Tool," UTC, \$36,405, 5/02, \$36,405.
  26. Slater, J.C., "Development of a Novel Method for Evaluating Material Behavior Under Turbine Engine Operating Conditions," DAGSI, \$90,077, 7/1/00-6/30/02, \$90,077.
  27. Slater, J.C., "Forced Response Enhancement to the Engine Structural Integrity Program Guidelines II," UTC, \$12,753, 8/11/00-2/15/01, \$12,753.
  28. Slater, J.C., "Forced Response Enhancement to the Engine Structural Integrity Program," Universal Technology Corp., \$13,473, 6 months, 8/12/99.
  29. Slater, J.C., "Turbomachinery Dynamics Experimentation, Universal Technology Corp.," \$14,256, 6 months, 6/1/99.
  30. Slater, J.C., "Electromechanical Engraving Device, Ohio Electronic Engravers: extension," \$5,980, 6 months, 9/1/98.
  31. Slater, J.C., "Field-of-View Research IPA, Naval Aeromedical Research Laboratory," \$10,000, 3 months, 6/1/98.
  32. Slater, J.C., "Experimental Study of Wave Propagation, Universal Technology Corp.," \$5,000, 3.5 months, 6/15/98.
  33. Slater, J.C., "Electromechanical Engraving Device, Ohio Electronic Engravers," 3 months, \$7,535, 4/14/98.
  34. Slater, J.C., Srinivasan, R., and Weiss, I., "Spring Manufacturer's Institute," SMI, Inc, \$10,080, 7 months, 1/13/98.
  35. Slater, J.C., "Analysis of Stress Wave Propagation in Bladed Disk Assemblies," Universal Technology Corp., \$26,372, 3 months, 6/17/97.
  36. Slater, J.C., "A Design Strategy for Preventing High Cycle Fatigue, RDL (AFOSR)," \$25,000, 1 year, 10/25/95.
  37. Lieh, J, and Slater, J.C., "Advanced 3D Camera Systems," Ohio Infrastructure Institute, \$80,920, 6/1/94.

## **VII Consulting**

1. Paul C. Krause and Associates, 2005-present.
2. Wheelchair Tip Over Dynamics, Schuck Law Offices, 1999.
3. Deployment and Reorientation Modeling of the Innovative Space Antenna Technology program, 2003.

## **VIII Service and Academic Outreach**

### **1 Associate Editor For:**

1. *Shock and Vibration* Journal, 2004-present
2. *International Journal of Modeling and Simulation*, 2004-2008

### **2 Professional Society Committees**

1. Member AIAA Gossamer Spacecraft Program Committee  
Major contributions:

- website: <http://www.cs.wright.edu/~gossamer>
  - Chaired sessions (see below)
2. AIAA Structural Dynamics Technical Committee  
Major contributions:
- (a) Hosted 2005 Fall Committee Meeting
  - (b) Chair: website committee - <http://www.aiaa.org/portal/index.cfm?GetComm=93>
  - (c) Member: Outreach committee - Converted award-winning outreach for release Spring 2006 (1.0), Spring 2007 (1.1) to web  
<http://www.cs.wright.edu/~jslater/WhatIsStructuralDynamics.html>
  - (d) Chaired sessions (see below)

### **3 Funding Panels**

1. NASA Large Aperture Research Program, panel chair, 2003
2. NSF Dynamic Systems & Controls panel member, 2004
3. NASA New Millennium ST-9 Program panel member, 2005

### **4 Reviewer for:**

1. Journals
  - (a) AIAA Journal
  - (b) Shock and Vibration
  - (c) AIAA Journal of Guidance, Control and Dynamics
  - (d) ASME Journal of Vibration and Acoustics
  - (e) International Journal of Modeling and Simulation
  - (f) Journal of Engineering for Gas Turbines and Power
  - (g) Journal of Intelligent Material Systems and Structures
  - (h) Journal of Nonlinear Mechanics
  - (i) AIAA Journal of Propulsion and Power
  - (j) Journal of Vibration and Control
  - (k) Mathematical and Computer Modeling
  - (l) Mechanical Systems and Signal Processing
  - (m) Nonlinear Dynamics
2. Books
  - (a) Prentice Hall: Engineering Dynamics, Tongue
  - (b) Prentice Hall: Engineering Mechanics: Statics, Soutas-Little and Inman
  - (c) Prentice Hall: Engineering Vibration, 2nd edition: Statics, Soutas-Little and Inman
  - (d) Burkhauser: First Steps in  $\LaTeX$ , George Gratzer
  - (e) McGraw Hill: Engineering Dynamics: Gray, Costanza and Plesha 1st draft
  - (f) McGraw Hill: Engineering Statics: Gray, Costanza and Plesha 2nd draft
  - (g) McGraw Hill: Engineering Dynamics: Gray, Costanza and Plesha 2nd draft
3. Conferences
  - (a) International Gas Turbine Institute
  - (b) AIAA SDM Conference, 40th, 41st, 42nd, 43rd, 45th, 46th, 47th, 48th

- (c) AIAA Gossamer Spacecraft Forum, 4th, 5th, 6th
- (d) AIAA Gossamer Spacecraft Forum Best Paper committee, 4th

## **5 Conference sessions chaired:**

1. AIAA SDM-21 at 41st SDM Conference (2000)
2. AIAA SDM at 43rd SDM Conference (2002)
3. AIAA SDM at 44th SDM Conference (2003)
4. AIAA SDM at 45th SDM Conference (2004)
5. AIAA SDM-59 at 45th SDM Conference (2004)
6. AIAA GSF-6 at SDM Conference 4th Gossamer Spacecraft Forum (2004)
7. AIAA SDM-42 at 46th SDM Conference (2005)
8. AIAA SDM-59 at 46th SDM Conference (2005)
9. AIAA GSF-3 at 46th SDM Conference 6th Gossamer Spacecraft Forum (2005)
10. AIAA SDM-26 at 47th SDM Conference (2006)
11. AIAA GSF-8 at 47th SDM Conference 7th Gossamer Spacecraft Forum (2006)
12. AIAA SDM-9 at 48th SDM Conference (2007)
13. AIAA GSF-4 at 48th SDM Conference 8th Gossamer Spacecraft Forum (2007)

## **6 On-Line Publications**

1. Mac- $\text{\TeX}$  web site, <http://www.esm.psu.edu/mac-tex>, since 2002 - the principle resource for  $\text{\TeX}$  users on the Macintosh.
2. Slater, J.C., "Getting Started With  $\text{\TeX}$  on MacOS X," <http://www.esm.psu.edu/mac-tex/start.html>, Oct., 2003-present.

## **7 Committees served on:**

### *i Department*

1. Department Faculty Search Committees, 1994-1996, 1997-2002, 2007-2008
2. Department Curriculum Committee, 1994-1996, 2003-2007 (chair 2006/2007)
  - (a) Introduced program change to eliminate "soft" elective courses that were being misused by students
  - (b) Reviewed and approved Materials Minor program
  - (c) Participated in incorporation of design throughout the program as prescribed by ABET
  - (d) Over-saw largest overhaul of Mechanic and Materials Engineering programs in 14 years.
3. Assistant to the Chair position search committee, chair, 2006 (2 times)
4. Student Recruitment position search committee, chair, 2006
5. Department Graduate Admissions Committee, 1997-2002
6. Honors and Awards Committee, 1997-1998

### *ii College*

1. College Library Committee, 1994-98 (Chair, 1996/7)
  - (a) Initiated library copying service concept.
  - (b) Developed web page for searching local resources focusing on the needs of CECS that streamlines the search process  
<http://www.cs.wright.edu/people/faculty/jslater/englib>.

2. College Curriculum Committee, 1996-1999 (Scribe 1996/7, Chair 1997-1999)
  - (a) Invited speakers from Math dept. to speak about courses they teach that are taken by our students (Calc. and DEs).
  - (b) Continued cooperation with Math dept. by initiating dept. by dept. evaluation of skills students need to acquire in Math courses.
  - (c) Oversaw two minors through the committee.
3. College PhD Program Coordinating Committee, 1996-2004
4. College PhD Program Student Affairs Committee, 2004-2005
  - (a) Assisted in the formulation of the Robotics and Controls Area program requirements.
5. College Teaching Committee, 1997-1999 (Scribe 1997/8)
6. College Steering Committee, 1999-2001, 2003-present, Chair 2004-2005, 2005-2006.
  - (a) Developed college bylaws
  - (b) Developed college awards procedures

### *iii University*

1. University Undergraduate Curriculum and Policies Committee, 1996-1999
2. University Legal Subcommittee of Campus-Wide Information System Advisory Committee, 1996-97
3. Graduate Council, 1996-1999
4. Faculty Senate, 1999-2001, *Engineering and Computer Science College Graduation Marshall, Fall 1999.*
5. University Ad Hoc Committee for Undergraduate Academic Program Review, 2005-2006

## **8 *Software Donated to the Scientific Community***

[www.cs.wright.edu/~jslater/software.shtml](http://www.cs.wright.edu/~jslater/software.shtml)

1. MacGzip package, MATLAB code for gzipping and un-gzipping files.
2. L<sup>A</sup>T<sub>E</sub>X style, bibliography, and example files for Society of Experimental Mechanics International Modal Analysis Conference. Adopted as standard format for conference papers for IMAC XVII conference.  
<http://www.sem.org/IMAC-17/Proceedings.htm>
3. No-Name file converters: a package of Perl scripts for converting end of line characters between Mac, Unix, and DOS formats, <http://www.cs.wright.edu/~jslater/nnfc>
4. poly2tex.m and matrix2tex.m: These octave/matlab functions take polynomials/matrices and convert them into strings that you can paste into your L<sup>A</sup>T<sub>E</sub>X document as ready-formatted equations.

## **9 *Software Donated to Education***

1. Trebuchet Designer: A graphical user interface code written in MATLAB for simulating the motion and predicting the projectile trajectory of a trebuchet. The code was written for use in the ME dept. course "Introduction to Engineering Design".

## **10 *Software Donated for General Purpose***

1. HP Communication Reset: The HP printer software often loses the ability to connect to your printer/scanner, etc. Rebooting the printer can help too. Bundled are a python script to do this

for you and an application that you can double click if you don't like to type at a command line. 2,000 downloads with 5-star rating.

2. Palm Sync-n-Quit: is a script to avoid crashing issues in Classic MacOS (pre-X) when using the serial port to sync a Palm Pilot. 5,000 downloads with 5-star rating.

## ***11 Retention and Recruitment Activities***

1. Master of Ceremony for TEAMS bridge breaking competition (a competition for high school students as part of the Test of Engineering Aptitude and Mathematics), 1997, 1998.
2. Designed the Wright State University Trebuchet competition. The new competition is intended to be easier for students to test their designs at home or at school without expensive equipment. Guidelines for the contest are available on-line.  
<http://www.wright.edu/treb>, 1999.
3. Director: WSU Trebuchet Competition, 1999-present. Over 600 high school students attended (450 participated) in this HS curriculum-integrated event in 2007. <http://www.wright.edu/treb>. See appendix for details.
4. Taught Computational Literacy part of the Wright State University College of Engineering and Computer Science Academic Advantage program, 1997, 1998.
5. Redesigned the entire Computational Literacy part of the Academic Advantage program course, 1998.
6. Advisor for the WSU chapter of the Society of Women Engineers, 2000-present.