

Robert Daniel Love

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QUALIFICATIONS

- **Ph.D. Aerospace Engineering**, University of Florida (2011)
- **M.S. Aerospace Engineering**, University of Florida, (2009), GPA: 3.25, **GRE**: Quant/Qual: 740/600
- **B.S. Aerospace, Materials Engineering**, Auburn University, (2007), Magna Cum Laude, GPA:3.61
- **High School**, Episcopal High School, GPA: 4.06, **SAT**: Math/Verbal: 760/660
- Active DoD Secret Clearance: Started: 7/2014

INTERESTS

Aircraft Design, Aeroservoelasticity, Structures, System Identification, Control, Adaptive Materials, Robotics, Computer Vision, Signal Processing, Composites, Actuators, Sensors, Nanostructures

EXPERIENCE

- **Airframe Design Engineer**, *General Atomics-Aeronautical Systems Inc.* (10/11-Present)
Aircraft configuration/structural design, Composite structure/tooling design, Ground support equipment, Computer aided design/Finite element analysis (FEA), 2D/3D Computational fluid dynamics (CFD), Business development
- **Graduate Research Assistant**, *Flight Control Lab, University of Florida* (5/07-8/11)
AFOSR MURI: "Biologically-Inspired Anisotropic Flexible Wing for Optimal Flapping Flight"
- System identification/control for flexible flapping and morphing wings
AVID Aerospace: Aeroservoelastic model validation for design codes
System Dynamics International: Phase II SBIR: "Controlling Micro Air Vehicles and Micro Munitions with Macro Fiber Composite Piezoelectric Actuators": Actuator characterization
- **Technical Intern**, *F-2 Program, Lockheed Martin Aeronautics* (5/06-8/06)
Rotation of Materials & Process, Manufacturing, Quality and Design Engineering
- Reviewed leading edge composite spar layup process, proposal to save 6 hr/spar, drill alignment mechanism design sketches, fastener statistical process control
- **Research Assistant**, *Materials Engineering Labs, Auburn University* (1/03-5/06)
DOE-INEEL: "Joining of Ferritic Oxide Dispersion Strengthened Steels"
- Sample manufacture, metallography, heat treatment, bonding, creep testing
GammaMetPX: Sample manufacture, metallography, high temp. tensile/oxidation tests
NASA Glenn/Boeing Rocketdyne: "Materials for Nuclear Electric Propulsion"
- Compiled superalloy property database, shear testing
AFRL: "Biomimetic Underground Payload Emplacement": Metrics for Fossorial Organisms
NASA GRC: "Transient Liquid Phase Bonding of Sheet TiAl Alloys"
- Hot-stage light microscopy wettability studies with image analysis
- **Research Assistant**, *Adaptive Aerostructures Lab, Auburn University* (8/04-5/05)
"Pitch Divergence Suppression of a Subscale Wing in Ground Effect (WIG) Aircraft"
- Manufacture/test WIG aircraft with pitch divergence suppression system
- **Counselor**, *Kanakuk Kamps* (5/04-7/04), **Tennis Teaching Assistant**, *Myrtle Beach Tennis Center* (6/03-7/03), **Dental Assistant**, *William L. Love D.D.S.* (5/00-8/00, 5/01-8/01, 5/02-8/02)

COMPUTER/LANGUAGE SKILLS

- Programming: Matlab/Simulink, Python, Java, C (AVR Studio), Fortran
- Software: Creo/Pro-Engineer/Mechanica/Mechanism/Simulate/Windchill, RDSwin, Digital DATCOM, XFLR5, XFOIL, Altair: Hypermesh, Acusolve, Acuconsole, Solid Edge, Solid Works, AutoCAD, Nastran/Patran, ImagePro, Maya/MotionBuilder





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JOURNAL PUBLICATIONS

- **Love, R. D.** and Lind, R. “Experimentally-Based Aeroservoelastic System Identification of Flexible Flapping Wings”, In Preparation, *AIAA Journal of Aircraft*
- **Love, R. D.** and Lind, R. “Time-Frequency Analysis of Aeroelastic Deformations of Flapping Wings”, *International Journal of Micro Aerial Vehicles*, vol. 3, pp. 89-100, 2011
- Aluru, R., Gale, W. F., Chitti, S.V., Sofyan, N.I., **Love, R. D.**, and Fergus, J.W., “Transient Liquid Phase Bonding of Dissimilar Nickel-Base Superalloys - Wettability, Microstructure and Mechanical Properties”, *Materials Science and Technology*, vol. 24, pp. 517-528, 2008

CONFERENCE/OTHER PUBLICATIONS

- **Love, R.** and Lind, R. “Experimentally-Based Aeroservoelastic System Identification and Feedforward Control of Flexible Flapping Wings”, **Invited Paper**, *AIAA Atmospheric Flight Mechanics Conference*, 2010
- **Love, R.**, Arroyo, A. and Schwartz, E., “Solar Ray: An Autonomous Solar-Powered Biomimetic Flapping-Wing Underwater Vehicle”, *Florida Conference for Recent Advances in Robotics*, 2010
- **Love, R.** and Lind, R., “Identification of Aeroservoelastic Models from Experimental Flapping-Wing Deflections,” **Invited Paper**, *AIAA Atmospheric Flight Mechanics Conference*, 2009
- **Love, R.**, “Analysis of Aeroelastic Flapping-Wing Signals for Micro Air-Vehicles,” *Masters' Thesis*, University of Florida, 2009
- Wu, P., Ifju, P., Stanford, B., Sallstrom, E., Ukeiley, L., **Love, R.**, and Lind, R., “An Experimental Study on Flapping Wing Aeroelasticity in Thrust Production,” *AIAA Structures, Structural Dynamics and Materials Conference*, 2009
- **Love, R.**, Lind, R., Wu, P., and Ifju, P., “Time-Frequency Analysis of Aeroelastic Deformations of Flapping Wings,” *AIAA Aerospace Sciences Meeting*, 2009
- **Love, R.** and Lind, R., “Time-Frequency Analysis of Aeroelastic Deformations of Flapping Wings,” *AIAA Graduate Student Conference*, Melbourne, FL, 2008
- **Love, R.D.**, “Pitch Divergence Suppression of a Subscale Wing in Ground Effect (WIG) Aircraft”, *AIAA Student Conference*, Gainesville, FL, 2005
- Aluru, R., Chitti, S.V., Sofyan, N.I., Krishnardula, V.G., **Love, R.D.**, and Gale, W.F., “Diffusion Brazing of Dissimilar Nickel-Base Superalloys: Microstructure, Wettability and Mechanical Properties”, *35th International Brazing and Soldering Conference*, 2005
- Payton, L.N., Chitti, S.V., Taarea, D.R., Sofyan, N.I., Gale, W.F., Butts, D.A., Aluru, R. and **Love, R.D.**, “Hot-Stage Light Microscopy Studies of the Wettability of Nickel-Base Superalloys During Transient Liquid Phase Bonding”, *Joining of Advanced and Specialty Materials VI*, p. 67-70, 2004

PROFESSIONAL DEVELOPMENT/CONTINUING EDUCATION

- Aircraft Conceptual Design, Daniel Raymer, 10/20-24/2014
- Altair Engineering: Introduction to AcuSolve/AcuConsole, Stuart Walker, 1/27-29/2014
- Kansas University: Airplane Preliminary Design, Willem Anemaat, 11/11-15/13
- Kansas University: Aircraft Performance, Jan Roskam/Mario Asselin, 1-6/1-30/13
- Kansas University: Structural Composites, Max Kismarton, 9/17-21/12

EXPERIMENTAL TEST EXPERIENCE

- **Ground Vibration/Modal Test:** *Laser Doppler Vibrometry* (Membrane, Hobby RC aircraft wings, Piezoelectric unimorph, Aluminum, Carbon-Fiber beam, Rocket), *Impact Hammer/Accelerometer*
- **Geometry/Deflection Test:** *Digital Image Correlation* (Membrane wings, Electro-active polymer)
- **Mechanical Properties Test:** High Temperature Tensile/Creep/Fatigue Machines, Nanoindenter
- **Material/Failure Test:** Scanning Electron Microscope, X-Ray Diffraction, Metallography



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FABRICATION EXPERIENCE

- *Mechanical*: Composite Layup/Cure, High Temperature Heat Treatment and Joining (Under Vacuum/Inert Gas), MIG/Arc Welding, CNC Electric Discharge Machining, Injection Molding, 3D Printing, CNC Shop Machines (Drill press, Lathe, Mill, Band saw, Belt sander)
- *Electrical*: Microprocessor and Printed Circuit Board Debugging/Programming, Soldering

CONFERENCE ACTIVITIES

- *Session Reviewer* “Flapping Wing Aeroelasticity”, *Session Chair* “Controls” AIAA Structures, Structural Dynamics and Materials Conference (10)

SCHOLARSHIPS

- **University of Florida**: *Graduate Alumni Fellowship*, (07-11, tuition waiver, \$21000+/yr)
- **Auburn University**: *Freshman Merit Scholarship* (2/3 Tuition, \$27000), *Scott Scholarship* (\$1000), *Kent Luttrell Endowed Scholarship* (\$1500), *Michael Pindzola Scholarship* (\$1000)
- *Foundry Educational Scholarship* (\$3000), *Society of American Military Engineers* (\$1500)

TEACHING EXPERIENCE

- Co-Teacher Student Science Training Program: “Aerospace, Mechanical, Materials Engineering” with Venkat Jayaraman(Summer 08)
- EAS4200C Aircraft Structures Teaching Assistant, Dr. R. Haftka (Fall 10)
- EGM2511 Statics Teaching Assistant, Dr. D. Jenkins (Spring 11)

TECHNICAL COURSEWORK HIGHLIGHTS

Auburn University

- Aerospace Design 1-2 (Project: Co-Manager AIAA Design, Build, Fly Team “Eagle Eye” Low Aspect Ratio Remote Control Flying Wing, Dr. G. Crouse)
- MATL 4900 Design (Project: Vaporized Hydrogen Peroxide Compatible Robot, Dr. W. Gale)

University of Florida

- EML 6281 Geometry and Mechanisms of Robotics (Project: Kinematic Analysis of Morphing Aircraft, Dr. S. Banks)
- EML 5526 Finite Element Analysis and Application (Project: Finite Element Analysis of Hummingbird-like Wings, Dr. A. Kumar)
- CAP 5416 Computer Vision (Project: An Experimental Study of 3D Models Generated with Simplified Voxel Coloring, Dr. J. Ho)
- EEL 5666C Intelligent Machines Design Lab (Project: “Solar Ray”: designed and built an autonomous, bio-mimetic, submersible, flapping-wing robot, Dr. A. Arroyo, Dr. E. Schwartz)

OTHER TECHNICAL ACTIVITIES

- Flight Control Lab: Onboard Flapping Video from Modified iFly Vamp (08)
- UF Mechanical and Aerospace (MAE) Graduate Student Council (08-10)
- Started “Transitions” Mentoring Program for New UF MAE Graduate Students (10)
- Cupola Engineering Society-Representatives of Auburn Engineering (04-06)
- AIAA (02-11, webmaster 03), AUVSI (10-11), Auburn Materials Society (03-06, webmaster 06)
- High School: 4th Place National KIPR Robotics Competition (02)

NON-TECHNICAL ACTIVITIES

- Sports: Started TIE Penguins Mixed Club Ultimate Team (12-14), Auburn Intramural Tennis Champion (03-06), Auburn/UF-B Ultimate Frisbee Team (05-10), Gainesville Ultimate League Captain (10-11), UF Club Tennis Team (07,10), Auburn Club Tennis Team (03-06), Half-Marathon Runner (10), High School: Varsity Tennis Captain (01-02), 3x District and 1x Regional Champion, All First Coast 1st Team, JV Soccer Captain (00)

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- Navigators Ministry Leadership Team, Bible Study Leader (03-07, webmaster 03-07)
- 2x Outstanding Rating-Trombone, Offered \$2500 Scholarship to Jacksonville University
- Mint.com Essay Contest Winner: Published Kiplinger's Personal Finance Magazine
- Actor ESPN Sports Figures Educational Series: "The Tennis Triangle", Air Date: Sept 17, 1995
- Traveled to 25 countries across 5 continents, lived in Saudi Arabia for 3 years

REFERENCES

- **Michael Stroup-General Atomics-Aeronautical Systems Inc.**
Aircraft Design Engineer
9779 Yucca Rd. Adelanto CA, 92301, (760) 530-2500 Mike.stroup@uav.com
- **Dr. Rick Lind-University of Florida (Primary Research Advisor)**
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- **Dr. Peter Ifju-University of Florida (Research Advisor)**
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- **Dr. William F. Gale-Auburn University (Research Advisor)**
Professor
University of Leeds, School of Process, Environmental and Materials Engineering
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- **Dr. Robert Gross-Auburn University (Professor, Department Advisor)**
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- **Dr. Gilbert Crouse-Auburn University (Professor, AIAA Design, Build, Fly Team Advisor)**
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