



Multi-Scale Structural Mechanics Annual Program Review

Dr. David Stargel | 17-19 August 2010 | Destin, FL

Agenda Day 1 – Tuesday, August 17, 2010

Time	Topic	Speaker
0700–0800	Registration	
Session I		
0800-0820	Introduction	David Stargel AFOSR/RSA
0820–0850	A Novel Probabilistic Multi-Scale Modeling And Sensing Framework For Fatigue Life Prediction Of Aerospace Structures And Materials	Somnath Ghosh Ohio State University
0850-0920	Modeling, Simulation and Sensing of Progressive Damage at Multiple Scales for Performance Prognosis in Metallic and Composite Aero Structures	Michael Sutton University of South Carolina
0920-0950	New Multiscale Methodology for Evaluating Distributions of Residual Stress in Processed Aerospace Alloys	Matthew Miller Cornell University
0950-1010	BREAK	
Session II		
1010-1030	Quantifying Structural Variability for Improved Health Monitoring	Mark Derriso AFRL/RB
1030-1050	Intelligent Multi-Scale Sensors for Damage Identification and Mitigation in Woven Composite for Aerospace Structural Applications	Kara Peters North Carolina State University
1050-1110	Nonlinear Structural Health Monitoring of the Responsive Space Satellite Systems using Magneto Elastic Active Sensors (MEAS)	Andrei Zagrai New Mexico Institute of Mining and Technology
1110-1130	Prognosis of Composite Structures: Simultaneous SHM/NDE and Analysis of the Interacting Material and Structural Behaviors under Long-Term In-Service Conditions	Richard Hall AFRL/RX
1130-1300	LUNCH	
Session III		
1300-1320	Multi-Scale Structural Health Monitoring For Damage Detection, Diagnosis and Prognosis of Aerospace Structures	Jennifer Michaels Georgia Tech Research Corp
1320-1340	Health Monitoring of Composite Structures using Guided Waves	Joseph Rose Pennsylvania State University
1340-1400	Computational Methods in NDE/ISHM for Damage State Characterization	Mark Blodgett AFRL/RX
1400-1420	Highly Sensitive and Robust Damage Detection of Periodic Structures with Piezoelectric Networking	Kon-Well Wang University of Michigan
1420–1440	BREAK	

Session IV

1440-1500	Design, Fabrication and Testing of a Passively Morphing Ornithopter Wing for Increased Lift and Agility	James Hubbard University of Maryland/Penn State University
1500-1520	(YIP08) Hybrid Laser/Video 3D Non-contact Motion Capture and Analysis	Jonathan Black AFIT
1520-1540	Damping of Micro Flexible Structures with Elastic Membranes	Roberto ALBERTANI University of Florida, REEF
1540-1600	Development and Application of a Biologically Inspired Methodology for the Optimized, Multi-Disciplinary and Multi-Obj	Marcelo Kobayashi University of Hawaii
1600-1630	MURI – Hybrid Materials for Extreme Environments	Dimitris Lagoudas
1630	MEETING ADJOURNED FOR THE DAY	



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Agenda Day 2 – Wednesday, August 18, 2010

Time	Topic	Speaker
0700–0800	Registration	
Session V		
0820–0840	Material Virtual Design: Fracture Parameters from Micro-to-Macro	David Mollenhauer AFRL/RX
0840–0900	Research in Tailoring the Electrical Response of Composite Materials using Carbon Nanotubes for Strain and Damage Sensing	Kalayu Belay Florida A&M University
0900-0920	Light Responsive Adaptive Material	Tim White AFRL/RX
0920–0940	BREAK	
Session VI		
0940-1000	Aeromechanical Response Characterization Capability for Dual Flow Path Integrally Bladed Rotors	Tommy George AFRL/RZ
1000-1020	Shock Response and Dynamic Failure of Spatially Tailored Aero-Thermal-Structures	Arun Shukla University of Rhode Island
1020-1040	Cable Effects and Structural Health Monitoring for Space Structures	Derek Doyle AFRL/RV
1040-1100	Meso-Scale Damage Quantification and Simulation in Energetic Materials	Mike Nixon AFRL/RW
1100-1120	Particulate Mechanics Foundations	William Cooper AFRL/RW
1120–1300	LUNCH	
1300-1430	* POSTER SESSION (See last two pages for listing)	
Session VII		
1430–1450	Minimizing Uncertainty in Metals Damage Prognosis	Jim Larsen AFRL/RX
1450–1510	Representation and Reconstruction of 3D Microstructure in Ni-Based Superalloys	Marc DeGraef Carnegie-Mellon University
1510–1530	Defect Identification and Composite Structures Using Enhanced Signal Analysis	Furakawa Tomonari Virginia Tech
1530-1550	Investigation of Fundamental Failure Mechanisms for Lifetime Management of Ceramic Matrix Composites	Randy Hay AFRL/RX
1550-1600	Closing Remarks	David Stargel AFOSR/RSA
1600	GRANTEES MEETING ADJOURNED	
1600-1800	Proposals Review Panel (PANELISTS ONLY)	



Agenda Day 3 – Thursday, August 19, 2010
PROPOSALS REVIEW PANEL (PANELISTS ONLY)

Time	Topic	Speaker
0800–1630	Proposals Review Panel	
1000–1015	BREAK	
1230–1410	LUNCH	
1530–1540	BREAK	
1630	PROPOSALS REVIEW PANEL MEETING ADJOURNED	



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* POSTER SESSION

Wednesday, August 18, 2010
1300-1430

	TOPIC	PRESENTER
1	High Performance Piezoelectric Actuators and Wings for Nano Air Vehicles	Christopher Rahn Pennsylvania State University
2	Quantification of Multiple Cracks using Mm-Wave Antenna Sensing Network	Haiying Huang University of Texas Arlington
3	Modeling of Ultrasonic and Terahertz Radiations in Defective Tiles for Condition Monitoring of Thermal Protection Systems	Tribikram Kundu University of Arizona
4	Design of Advanced Multi-Layered Hybrid Structures with Embedded Diagnostics	Fu-Kuo Chang Stanford University
5	Unified Theory for Nonlinear, Dynamic, Thermo-Mechanical Analysis of Deep, Layered, Smart Shells with 3d Stress Recovery	Wenbin Yu Utah State University
6	Scientific Challenges Associated with Multi-Materials System with Adaptive Microstructures for Aerospace	Hamish Fraser Ohio State University
7	Active Knits for Radical Change Air Force Structures	Diann Brei University of Michigan
8	Numerical Methods for Material Systems with Microstructure Addressing Structural Response and Multiscale Couplings	John Dolbow Duke University
9	Snap-Through and Continuation	Ilinca Stanciulescu Rice University
10	Propagation of Uncertainty for Model Validation of Substructured Spacecraft	Daniel Kammer University of Wisconsin
11	Wavelet Spectral Finite Elements for Wave Propagation in Composite Plates	Ratan Jha Clarkson University
12	Structural Response Prediction for Reusable Hypersonic Platforms	Chona/Spottsward AFRL/RB
13	Forecasting Aircraft Usage for Prognostics	Tuegel AFRL/RB
14	Microstructural Design and Optimization of Highly-Filled Polymer-Based Composites	Spowart AFRL/RX
15	Dislocation Simulations for Understanding Microstructure Sensitivity in Structural Alloys	Uchic AFRL/RX
16	Broadband Penetrator Structural Dynamics: Understanding the Impulse-Response of Structures Across Multiple Length and Time Scales	Foley AFRL/RW
17	Microstructural Design and Optimization of Highly-Filled Polymer-Based Composites	Jordan AFRL/RW
18	Aeromechanical Response Characterization Capability for Dual Flow Path Integrally Bladed Rotors	Haney/Martin/Reiji AFRL/RB