TECHNICAL PROGRAM

Overview

Monday, September 12th

15:00 ~ 17:00		**Early Registration**						*Location: Crowne Plaza Hotel Cabana, Palo Alto*	
17:00 ~ 19:00		**Reception**						*Location: Crowne Plaza Hotel Cabana, Palo Alto*	

Tuesday, September 13th

	Room: HC 200-002	Room: HC 200-030	Room: HC 200-034	Room: HC 200-203	Room: HC 200-205	Room: HC 200-303	Room: HC 200-305	Room: ART 2	Room: ART 4
07:00 ~ 08:25		**Registration**		Light Continental Breakfast				*Location: Dohrmann Grove*	
08:25 ~ 08:40		**Opening Remarks**						*Location: Memorial Auditorium*	
08:40 ~ 09:10		**Keynote 1**		Speaker: Matthias Buderath [Cassidian, Germany]				*Location: Memorial Auditorium*	
09:10 ~ 09:40		**Keynote 2**		Speaker: Felix Wu [NIST, USA]				*Location: Memorial Auditorium*	
09:40 ~ 10:00		**Coffee Break**						*Location: Dohrmann Grove*	
09:40 ~ 14:05		**Poster Sessions**		Poster Session, Special Poster Session: NIST Technology Innovation Program (TIP)				*Location: Dohrmann Grove*	
10:00 ~ 12:00	Aerospace Structures: Field Evaluation and Validation - I	Sensors and Actuators Development - I	**SPECIAL SESSION** Bio-inspired Sensing and Actuation Technology - I Chairs: J. Lynch, K. Loh	Prognostics and Data Mining for Health Management - I	Advanced Diagnostics for Damage Assessment - I	**SPECIAL SESSION** Wind Turbines Monitoring - I Chair: W. Staszewski	Operational Effects Consideration in SHM - I	Civil Infrastructures: Lab Demonstration - I	**SPECIAL SESSION** Monitoring of Civil Engineering Structures with MEMS - I Chairs: C. Grosse, J. Lynch
12:00 ~ 13:00		**Lunch at the Oval**						*Location: The Oval*	
13:00 ~ 14:05		**Poster Sessions: Q & A**						*Location: Dohrmann Grove*	
14:05 ~ 15:45	Aerospace Structures: Field Evaluation and Validation - II	Sensors and Actuators Development - II	**SPECIAL SESSION** Bio-inspired Sensing and Actuation Technology - II Chairs: J. Lynch, K. Loh		Advanced Diagnostics for Damage Assessment - II	**SPECIAL SESSION** Wind Turbines Monitoring - II Chair: W. Staszewski	Operational Effects Consideration in SHM - II	Civil Infrastructures: Lab Demonstration - II	**SPECIAL SESSION** Monitoring of Civil Engineering Structures with MEMS - II Chairs: C. Grosse, J. Lynch
15:45 ~ 16:00		**Coffee Break**						*Location: Dohrmann Grove*	
16:00 ~ 17:15		**Panel Discussion**		Chair: TBA				*Location: TBA*	
18:30 ~ 22:00		**SHM Networking Welcome Night**						*Location: Frost Amphitheater*	

Wednesday, September 14th

	Room: HC 200-002	Room: HC 200-030	Room: HC 200-034	Room: HC 200-203	Room: HC 200-205	Room: HC 200-303	Room: HC 200-305	Room: ART 2	Room: ART 4
08:30 ~ 09:00		**Keynote 3**		Speaker: Jim Cycon [Sikorsky, USA]				*Location: Memorial Auditorium*	
09:00 ~ 09:30		**Keynote 4**		Speaker: Luis G. dos Santos [Embraer, Brazil]				*Location: Memorial Auditorium*	
09:30 ~ 10:00		**Keynote 5**		Speaker: Peter Foote [BAE Systems, USA]				*Location: Memorial Auditorium*	
10:00 ~ 10:20		**Coffee Break**						*Location: Dohrmann Grove*	
10:20 ~ 12:00	Aerospace Structures: Field Evaluation and Validation - III & AISC-Guidebook Development Panel Session (30 min)	Sensors and Actuators Development - III	**SPECIAL SESSION** Verification and Validation of Damage Sensing - I Chair: E. Medina	Prognostics and Data Mining for Health Management - II	Advanced Diagnostics for Damage Assessment - III	Quantification / Validation / Certification	Novel Signal Processing Techniques - I	Civil Infrastructures: Field Evaluation and Validation - I	**SPECIAL SESSION** Structural Health Monitoring of Wind Turbines Chair: J. R. White
12:00 ~ 13:00		**Lunch at the Oval**						*Location: The Oval*	
13:00 ~ 14:20	Aerospace Structures: Laboratory Demonstration - I	Sensors and Actuators Development - IV	**SPECIAL SESSION** Verification and Validation of Damage Sensing - II Chair: E. Medina	Prognostics and Data Mining for Health Management - III	**SPECIAL SESSION** Intelligent sensor networks for SHM - I Chairs: J. Lynch, A. Swartz	Advanced Monitoring for Load / Environments	Novel Signal Processing Techniques - II	Civil Infrastructures: Field Evaluation and Validation - II	**SPECIAL SESSION** Advanced SHM for Ship Structures Chair: L. Salvino
14:20 ~ 14:40		**Coffee Break**						*Location: Dohrmann Grove*	
14:40 ~ 17:00		**SHM in Action**		Chair: TBA				*Location: Memorial Auditorium*	
18:30 ~ 22:00		**Banquet and Award Night**						*Location: Crowne Plaza Hotel Cabana, Palo Alto*	

Thursday, September 15th

	Room: HC 200-002	Room: HC 200-030	Room: HC 200-034	Room: HC 200-203	Room: HC 200-205	Room: HC 200-303	Room: HC 200-305	Room: ART 2	Room: ART 4
08:30 ~ 09:00		**Keynote 6**		Speaker: Anne S. Kiremidjian [Stanford University, USA]				*Location: Memorial Auditorium*	
09:00 ~ 09:40		**Keynote 7**		Speaker: Dennis Roach [Sandia National Laboratories, USA]				*Location: Memorial Auditorium*	
09:40 ~ 10:00		**Coffee Break**						*Location: Dohrmann Grove*	
10:00 ~ 12:00	Aerospace Structures: Laboratory Demonstration - II	**SPECIAL SESSION** Intelligent sensor networks for SHM - II Chairs: J. Lynch, A. Swartz	**SPECIAL SESSION** Hot Spot Monitoring - I Chairs: H. Sohn, J.B. Ihn, M. Leonard	**SPECIAL SESSION** Wave Propagation Simulation - I Chairs: W. Staszewski, W. Ostachowicz	Advanced Diagnostics for Damage Assessment - IV	**SPECIAL SESSION** Decision Making in Structural Health Monitoring - I Chairs: D. Zonta, M. Todd	Novel Signal Processing Techniques - III	**SPECIAL SESSION** SHM Benchmark for High-rise Structures - I Chair: Y.Q. Ni	**SPECIAL SESSION** Non-contact Sensing Technologies - I Chair: H. Sohn
12:00 ~ 13:20		**Lunch at the Oval**						*Location: The Oval*	
12:00 ~ 13:20		**Faculty / Student Panel**		Chair: Charles Farrar				*Location: TBA*	
13:20 ~ 15:20	Aerospace Structures: Laboratory Demonstration - III	**SPECIAL SESSION** Intelligent sensor networks for SHM - III Chairs: J. Lynch, A. Swartz	**SPECIAL SESSION** Hot Spot Monitoring - II Chairs: H. Sohn, J.B. Ihn, M. Leonard	**SPECIAL SESSION** Wave Propagation Simulation - II Chairs: W. Staszewski, W. Ostachowicz	Advanced Diagnostics for Damage Assessment - V	**SPECIAL SESSION** Decision Making in Structural Health Monitoring - II Chairs: D. Zonta, M. Todd	Modeling / Simulation	**SPECIAL SESSION** SHM Benchmark for High-rise Structures - II Chair: Y.Q. Ni	**SPECIAL SESSION** Non-contact Sensing Technologies - II Chair: H. Sohn
15:20 ~ 15:35		**Coffee Break**						*Location: Dohrmann Grove*	
15:35 ~ 17:00		**Panel Discussion**		Chair: TBA				*Location: TBA*	

HC: History Corner (200) / **ART**: Cummings (Nathan) Art Building

T E C H N I C A L P R O G R A M

Tuesday, September 13th

07:00 ~ 08:25	**Registration** Light Continental Breakfast *Location: Dohrmann Grove*	

Opening Remarks

TIME		PAGE NO.
08:25~08:40	TBA *Location: Memorial Auditorium*	

Keynotes

Chair: TBA

Location: Memorial Auditorium

TIME		PAGE NO.
08:40 ~ 09:10	**Integration of Structural Health Monitoring Systems into Unmaned Aerial Systems - Challenges and Opportunities** Matthias Buderath [Cassidian, Germany]	y
09:10 ~ 09:40	**The Challenges of Structural Health Monitoring Technologies in Civil Infrastructure** Felix Wu [NIST, USA]	y

09:40 ~ 10:00	**Coffee Break** *Location: Dohrmann Grove*	

Poster Sessions

TIME		PAGE NO.
09:40 ~ 14:05	**Poster Session** **&** **Special Poster Session: NIST Technology Innovation Program (TIP)** *Location: Dohrmann Grove*	

Aerospace Structures: Field Evaluation and Validation - I

Chair: TBA

Location: HC 200-002

TIME		PAGE NO.
10:00 ~ 10:20	**Real-Time Micro-Explosive Damage Detection in an Unmanned Rotorcraft Vehicle Using Embedded Sensing** H. Edge[1], H. Chung[2], M. Coatney[1], B. Mary[1], P. Tibbits[1], M. Murugan[1], A. Ghoshal[1], D. Le[1], M. Pappakostas[2] [1) Army Research Laboratory, USA; 2) Acellent Technologies, Inc., USA]	y
10:20 ~ 10:40	**Comparisons of SHM Sensor Models with Test Data for Sandwich Composite Structures** V. Hafiychuk[1], D. G. Luchinsky[1], V. N. Smelyanskiy[1], R. Tyson[2], J. Miller[3], C. Banks[3] [1) NASA Ames Research Center, USA; 2) University of Alabama, USA; 3) NASA Marshall Space Flight Center, USA]	y
10:40 ~ 11:00	**Large Sensor Network Architectures for Monitoring Large-Scale Structures** D. Zhang, B. Zheng, H. Chung, S. Banerjee, S. Beard, I. Li [Acellent Technologies Inc., USA]	y
11:00 ~ 11:20	**Overview of CVM Technology Tests Performed by Embraer** R. P. Rulli, P. A. da Silva [Embraer S.A. Lima, Brazil]	y

11:20 ~ 11:40	**Advanced System-Level Reliability Analysis and Prediction with Field Data Integration** T. Meyer[1], J. Berg[1], A. Palladino[1], Avinash Sarlashkar[1], S. Hussain[2], D. Lamb[2] [1) Impact Technologies, USA; 2) US Army RDECOM-TARDEC, USA]	y
11:40 ~ 12:00	**Development and Testing of an Ultrasonic Phased Array System Based on Piezo Actuators and Fiber Optic Sensors** M. Scheerer[1], C. Bockenheimer[2], A. Dantele[3], Z. Djinovic[4], F. Graf[5], T. Natschläger[6], A. Peldszus[7], M. Reiterer[8], T. Sauter[9], R. Stössel[10] [1) Aerospace & Advanced Composites GmbH, Austria; 2) Airbus, USA; 3) Profactor, Austria; 4) Integrated Microsystems Austria GmbH, Austria; 5) Joanneum research, Austria; 6) Software Competence Center Hagenberg, Austria; 7) FACC, Austria; 8) RED Bernard, Austria; 9) ÖAW, Austria; 10) EADS Innovation Works, Germany]	y

Sensors and Actuators Development - I

Chair: TBA

Location: HC 200-030

TIME		*PAGE NO.*
10:00 ~ 10:20	**Very Dense Arrays of Sensors for SHM Based on Large Area Electronics** B. Glisic, N. Verma [Princeton University, USA]	y
10:20 ~ 10:40	**On-Board Structural Health Monitoring (OBSHM) Smart Tag** N. Agianniotis[1], C. Papadas[1], P. Anagnostopoulos[1], V. Rouet[2], B. Foucher[2] [1) Integrated Systems Development ISD S.A., Maroussi, Greece; 2) EADS France]	y
10:40 ~ 11:00	**Highly Nonlinear Granular Crystal Sensor and Actuator for Delamination Detection in Composite Structures** J. Yang[1], F. Restuccia[2], C. Daraio[3] [1) University of South Carolina, USA; 2) University of Edinburgh, UK; 3) California Institute of Technology, USA]	y
11:00 ~ 11:20	**The Implementation of Piezoelectric Wafer Sensors for Acoustic Emission Sensing in Aluminum** D. Ozevin[1], Z. Li[2] **[1) University of Illinois at Chicago, USA; 2) Xi'an Aircraft Strength Institute, China]**	y
11:20 ~ 11:40	**Diagnosis of Internal Defect of a Pipe by Mechanoluminescent Sensor** S. Guo[1], C.-N. Xu[1,2], D. Ono[1] [1) National Institute of Advanced Industrial Science and Technology, Japan; 2) Japan Science and Technology Agency, Japan]	y
11:40 ~ 12:00	**Development of an Integrated Fiber Bragg Grating Contact Pressure and Temperature Sensor for Composite Smart Manufacturing** L. Maurin[1], P. Ferdinand[1], L. Robert[2], J.-J. Orteu[2] [1) CEA, LIST, France; 2) Université de Toulouse, France]	y

SPECIAL SESSION

Bio-inspired Sensing and Actuation Technology - I

Chairs: J. Lynch (Univ. of Michigan, USA), K. Loh (UC Davis, USA)

Chair: TBA

Location: HC 200-034

TIME		*PAGE NO.*
10:00 ~ 10:20	**Cochlea-Based Spectral Decomposition of Sensor Signals for Resource-Constrained Sensor Networks** C. A. Peckens, J. P. Lynch [University of Michigan, USA]	y
10:20 ~ 10:40	**Bio-inspired Smart Skin based on Expandable Network** Z. Guo, K. Kim, G. Lanzara, N. Salowitz, P. Peumans, and F.-K. Chang [Stanford University, USA]	
10:40 ~ 11:00	**Integrated Piezo-Element Drive Electronics for Structural Health Monitoring** Y. Guo, B. Murmann [Stanford University]	y
11:00 ~ 11:20	**Micropillar Sensing Element for Bio-Inspired Flow Sensors** J. Tao, X. Yu, J. Berilla [Case Western Reserve University, USA]	y
11:20 ~ 11:40	**A Bio-Inspired Nanocomposite for Photocurrent-based Strain Sensing** D. Ryu, K. J. Loh [University of California, Davis, USA]	y
11:40 ~ 12:00	**Improving the Reliability of Sensor Skins for Structural Health Monitoring** I. Mohammad, H. Huang [University of Texas at Arlington, USA]	y

Prognostics and Data Mining for Health Management - I

Chair: TBA

Location: HC 200-203

TIME		*PAGE NO.*
10:00 ~ 10:20	**Prognostic Modeling and Experimental Techniques for Electrolytic Capacitor Health Monitoring** C. Kulkarni[1], J. Celaya[2], G. Biswas[1], K. Goebel[2] [1) Vanderbilt University, USA; 2) NASA Ames, USA]	y
10:20 ~ 10:40	**Improving the Accuracy of Structural Fatigue Life Tracking Through Dynamic Strain Sensor Calibration** H. Lee[1], J. Sheldon[1], M. Watson[1], C. Palmer[1], T. Fallon[2] [1) Impact Technologies, LLC., USA; 2) Naval Air Systems Command, USA]	y
10:40 ~ 11:00	**A 9-Step Process for Developing a Structural Health Monitoring System** S. Graves[1], K. Rens[2], F. Rutz[2] [1) Structure Inspection and Monitoring, Inc., USA; 2) University of Colorado Denver, USA]	y
11:00 ~ 11:20	**Combined and I Indices Based on Principal Component Analysis for Damage Detection and Localization** D. A. Tibaduiza, L. E. Mujica, M. Anaya, J. Rodellar [Universitat Politécnica de Catalunya, Spain]	y
11:20 ~ 11:40	**An Experimental and Numerical Investigation of Damage Detection in a Mistuned Bladed Disc** A.U. Rehman, K. Worden, J. A. Rongong [University of Sheffield, UK]	y
11:40 ~ 12:00	**Fatigue Evaluation and Prognosis for Steel Bridges with Remote Acoustic Emission Monitoring** J. Yu, P. Ziehl [University of South Carolina, USA]	y

Advanced Diagnostics for Damage Assessment - I

Chair: TBA

Location: HC 200-205

TIME		*PAGE NO.*
10:00 ~ 10:20	**Damage Diagnosis Algorithm for Civil Structures Using a Sequential Change Point Detection Method and Time-Series Analysis** H. Y. Noh, R. Rajagopal, A. S. Kiremidjian [Stanford University, USA]	y
10:20 ~ 10:40	**Cointegration and SHM of Bridges** E. J. Cross, K. Worden, K.-Y. Koo, J. M.W. Brownjohn [University of Sheffield, UK]	y
10:40 ~ 11:00	**Piezoceramic-Based 2-D Spiral Phased Array for Damage Detection of Thin Orthotropic Composite Laminates** B. Yoo, D. J. Pines [University of Maryland, USA]	y
11:00 ~ 11:20	**Guided Wave and Probability Based Diagnostic Imaging for Detection of Multiple Welding Damages in Welded Tubular Steel Structures** X. Lu[1], M. Lu[2], L. Zhou[2], Z. Su[2], L. Cheng[2], L. Ye[3], G. Meng[1] [1) Shanghai Jiao Tong University, China; 2) Hong Kong Polytechnic University, Hong Kong SAR; 3) University of Sydney, Australia]	y
11:20 ~ 11:40	**Nonlinear Cointegration as a Combinatorial Optimisation Problem** E.J. Cross and K. Worden [University of Sheffield, UK]	y
11:40 ~ 12:00	**Characterizing Damage Based on Locally Perturbed Dynamic Equilibrium** H. Xu, L. Cheng and Z. Su [The Hong Kong Polytechnic University, Hong Kong]	y

SPECIAL SESSION

Wind Turbines Monitoring - I

Chair: W. Staszewski (Sheffield University, UK)

Chair: TBA

Location: HC 200-303

TIME		*PAGE NO.*
10:00 ~ 10:20	**Coupling Sensor-Based Structural Health Monitoring with Finite Element Model Updating for Probabilistic Lifetime Estimation of Wind Energy Converter Structures** D. Hartmann[1], K. Smarsly[2], K. H. Law[2] [1) Ruhr-University Bochum, Germany; 2) Stanford University, USA]	y
10:20 ~ 10:40	**Aspects of Automatization of Wind Farm Monitoring on the Example of a Diagnostic Center** B. Tomasz, A. Jablonski [AGH University of Science and Technology, Poland]	y
10:40 ~ 11:00	**In-Operation Identification of a Wind Turbine Structure via Non-Stationary Parametric Models** L. D. Avendaño-Valencia, M. D. Spiridonakos, S. D. Fassois [University of Patras, Greece]	y

11:00 ~ 11:20	**Structural Integrity Monitoring of the Critical Zones in the Wind Turbine Composite Blades with the use of Integrated Sensors - SESS Poject** A. Hanc[1], K. Dragan[2], M. McGugan[3], T. Uhl[4] [1) EC Electronics, Poland; 2) Air Force Institute of Technology, Poland; 3) Materials Research Division, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Denmark; 4) AGH University of Science and Technology, Poland]	y
11:20 ~ 11:40	**Lightning Protected Monitoring System for Wind Turbine Rotor Blades** B. Frankenstein[1], L. Schubert[1], E. Schulze[1], D. Fischer[1], B. Weihnacht[1], R. Rieske[2] [1) Fraunhofer IZFP-Dresden, Germany; 2) Technical University Dresden, IAVT, Germany]	y
11:40 ~ 12:00	**Appropriate Rigid Body Correction for Analyzing the Dynamics of Rotating Structures using 3D Digital Photogrammetry** T. Lundstrom, C. Niezrecki, P. Avitabile [The University of Massachusetts, USA]	y

Operational Effects Consideration in SHM - I

Chair: TBA

Location: HC 200-305

TIME		*PAGE NO.*
10:00 ~ 10:20	**A View into Baseline Free Guided Wave Approaches for Structural Health Monitoring** U. Lieske, C. Boller [Fraunhofer Institute for Non-Destructive-Testing, Dresden, Germany]	y
10:20 ~ 10:40	**Physics Based Temperature Compensation Strategy for Structural Health Monitoring** S. Roy, K. Lonkar, V. Janapati, F.-K. Chang [Stanford University, USA]	y
10:40 ~ 11:00	**Load-Enhanced Imaging of Fatigue Cracks via Sparse Guided Wave Arrays** J. E. Michaels, S. J. Lee, X. Chen, T. E. Michaels [Georgia Insitute of Technology, USA]	y
11:00 ~ 11:20	**Effect of Water Temperature on the Laser-based Ultrasonic Testing of Immersed Structures** P. Rizzo, E. Pistone [Department of Civil and Environmental Engineering, University of Pittsburgh, PA, USA]	y
11:20 ~ 11:40	**Mystery Revealed on Natural Frequency Change of a Structure During Rainstorms** M. H. Cheng, V. Heckman, T. Heaton [California Institute of Technology, USA]	y
11:40 ~ 12:00	**Influence of Environment Condition on the Group Velocity of the Lamb Wave for SHM System** K. Takahashi[1], H. Soejima[1], T. Ogisu[1], Y. Okabe[2], N. Takeda[2], Y. Koshioka[3] [1) Fuji Heavy Industries Ltd., Aerospace Company, Japan; 2) University of Tokyo, Japan; 3) RIMCOF Research Center of Advanced Materials and Composties, Japan]	y

Civil Infrastructures: Lab Demonstration - I

Chair: TBA

Location: ART 2

TIME		*PAGE NO.*
10:00 ~ 10:20	**Sensing Resolution and Measurement Range of a Passive Wireless Strain Sensor** X. Yi, T. Wu, G. Lantz, J. Cooper, C. Cho, Y. Wang, M. M. Tentzeris, R. T. Leon [Georgia Institute of Technology, USA]	y
10:20 ~ 10:40	**Ultrasonic Wall Thickness Monitoring at High Temperatures (>500 ℃)** F. Cegla[1], P. Cawley[1], J. Allin[2], J. Davies[2] [1) Imperial College, UK; 2) Permasense Ltd, UK]	y
10:40 ~ 11:00	**Early Detection of Fatigue Damage in Notched and Welded Steel Structures Using Active Thermography** R. Plum, T. Ummenhofer [Karlsruhe Institute of Technology, Germany]	y
11:00 ~ 11:20	**A Wavelet Based Methodology for Damage Detection and Severity Assessment on the ASCE Benchmark Structure Using Phase II Experimental Data** M. Jamal-Ahmad, J. Carter [Imperial College, UK]	y
11:20 ~ 11:40	**Integrate On-line RSSA and RSSI-COV Algorithms for Operational Modal Analysis of Bridge Structures** C.-H. Loh, Y.-C. Liu, F.-M. Wu [National Taiwan University, Taiwan]	y
11:40 ~ 12:00	**Crack Growth Monitoring System for Concrete Structures Based on Non-contact Displacement Measurements** T. Kusaka, Y. Nomura, T. Sakamoto, T. Fujii [Ritsumeikan University, Japan]	y

SPECIAL SESSION

Monitoring of Civil Engineering Structures with MEMS - I

Chairs: C. Grosse (TU Munich, Germany), J. Lynch (Univ. of Michigan, USA)

Chair: TBA

Location: ART 4

TIME		*PAGE NO.*
10:00 ~ 10:20	**Fiber Optic Method for Buried Pipelines Health Assessment after Earthquake-Induced Ground Movement** B. Glisic, Y. Yao, K. Oberste-Ufer [Princeton University, USA]	y
10:20 ~ 10:40	**Decentralized Fault Detection in Wireless Sensor Networks** C. Lo, M. Liu, J. P. Lynch [University of Michigan, USA]	y
10:40 ~ 11:00	**Framework for Comparison Study of Stochastic Modal Identification Considering Accuracy and Efficiency** M. Chang, S. N. Pakzad, C. Schanck [Lehigh University, USA]	y
11:00 ~ 11:20	**Automated System Identification and Validation of Numerical Models of Offshore Wind Turbines as Basis for SHM-Analysis** M. W. Häckell, G. Haake, R. Rolfes [University of Hannover, Germany]	y
11:20 ~ 11:40	**Novel Sensor Concept for Monitoring of Wind Turbine Blades** S. Zerbst[1], R. Rolfes[1], K. H. Haase[2], M. Knops[3] [1) University of Hannover, Germany; 2) HBM - Hottinger Baldwin Messtechnik GmbH, Germany. 3) REpower Systems AG, Germany]	y
11:40 ~ 12:00	**Laboratory Validation of MEMS-Based Sensors for Post-Earthquake Damage Assessment** D. Zonta[1], D. Trapani[1], F. Larcher[1], A. Amditis[2], M. Bimpas[2], N. Bertsch[3], A. Garetsos[4], Y. Stratakos[4], N. Saillen[5], J. Santana[6], T. Sterken[7], T. Torfs[8], D. Ulieru[9] [1) University of Trento, Italy; 2) National Technical University of Athens, Greece; 3) Memscap SA, France; 4) Advanced Microwave Systems Ltd., Greece; 5) Thermo Fisher Scientific, The Netherlands; 6) IMEC-NL, The Netherlands; 7) IMEC Ghent, Center for Microsystem Technology, Belgium; 8) IMEC, Belgium; 9) SITEX 45 SRL, Romania]	y

12:00 ~ 13:00	**Lunch at the Oval** *Location: The Oval*	

Poster Sessions: Q & A

TIME		*PAGE NO.*
13:00 ~ 14:05	**Poster Session** **&** **Special Poster Session: NIST Technology Innovation Program (TIP)** *Location: Dohrmann Grove*	

Aerospace Structures: Field Evaluation and Validation - II

Chair: TBA

Location: HC 200-002

TIME		*PAGE NO.*
14:05 ~ 14:25	**Damage Detection Method for CFRP Bolted Joints using Embedded BOCDA Optical Fiber Sensor** N. Saito[1], T. Yari[1], K. Nagai[1], K. Enomoto[2] [1) Mitsubishi Heavy Industries, LTD., Japan; 2) RIMCOF Research Center of Advanced Metals and Composites,The Material Process Technology Center, Japan]	y
14:25 ~ 14:45	**Development of the Simultaneous Measurement System for Strain and Acoustic Emission using a Fiber Bragg Grating Sensor and a Fiber Ring Laser** T. Nakajima[1], E. Sato[2], H. Tsuda[3], A. Sato[4], N. Kawai[2], H. Kawasaki[1] [1) IHI Inspection & Instrumentation Co.,Ltd, Japan; 2) Institute of Space and Astronautical Science, JAXA, Japan; 3) National Institute of Advanced Industrial Science & Technology, Japan; 4) IHI Aerospace Co. Ltd, Japan]	y
14:45 ~ 15:05	**Wireless and Batteryless Accelerometry for Aircraft Structural Health Monitoring** R. Monthéard[1,2], C. Escriba[1,2], J.-Y. Fourniols[1,2], M. Lastapis[1,2], J.-M. Prunet[3], M. Bafleur[1,2], J.-M. Dilhac[1,2] [1) CNRS, France; 2) Université de Toulouse, France; 3) Tag Technologies, France]	y

15:05 ~ 15:25	**Flight Data from an Airworthy Structural Health Monitoring System for an Unmanned Air Vehicle using Integrally Embedded Fiber Optic Sensors** N. Gupta[1], Augustin M. J.[1], S. Sathya[1], R. Sundaram[1]; M. H. Prasad[2], A. C. R. Pillai[3]; S. Gali[4]; J. Balter, P. Guedj[4], I. Kressel[4]; A. Hendleman[5], Y. Botsev[5], N. Gorbatov[5], M. Tur[5] [1) National Aerospace Laboratories, India; 2) Aeronautical Development Establishment, India; 3) Consultant, Israel; 4) AI Engineering Division Ben Gurion International Airport, Israel; 5) Tel-Aviv University, Israel]	y
15:25 ~ 15:45	**Algorithms to Monitor Damaging Events on a Plane Blade with an Autonomous Embedded Microsystem** M. Lastapis[1,2], C. Escriba[1,2], J.-Y. Fourniols[1,2] [1) CNRS, France; 2) Université de Toulouse, France]	y

Sensors and Actuators Development - II

Chair: TBA

Location: HC 200-030

TIME		*PAGE NO.*
14:05 ~ 14:25	**Development and Qualification of FBG-based Strain Patches and Rosettes** N. Kusche, V. G. Schukar, C. Schilder, E. Köppe, W. R. Habel [Federal Institute for Materials Research and Testing BAM, Germany]	y
14:25 ~ 14:45	**Characterization of Ultrasound Detection Using a Strain-Insensitive FBG Sensing System Incorporating Fiber Ring Laser** H. Tsuda [National Institute of Advanced Industrial Science and Technology, Japan]	y
14:45 ~ 15:05	**Improved Sensor Concepts for Durability Monitoring of Reinforced Concrete Structures** A. Holst, H. Budelmann, H.-J. Wichmann [University of Braunschweig, Germany]	y
15:05 ~ 15:25	**Photoacoustic Ultrasound Generation on an Optical Fiber Tip Using Gold Nanoparticles as the Target Material** N. Wu, Y. Tian, X. Zou, X. Wang [University of Massachusetts Lowell, USA]	y
15:25 ~ 15:45	**Properties of Interdigital Transducers for Lamb-wave Based SHM Systems** M. Manka[1], M. Rosiek[1], A. Martowicz[1], T. Uhl[1], T. Stepinski [2] [1) AGH University of Science and Technology, Poland; 2) Uppsala University, Sweden]	y

SPECIAL SESSION

Bio-inspired Sensing and Actuation Technology - II

Chairs: J. Lynch (Univ. of Michigan, USA), K. Loh (UC Davis, USA)

Chair: TBA

Location: HC 200-034

TIME		*PAGE NO.*
14:05 ~ 14:25	**Bio-inspired Computing Algorithms for Adaptive Structural Health Monitoring** W. Liu, B. Chen [Michigan Technological University, USA]	y
14:25 ~ 14:45	**Field Validation of Flexure-Based Mobile Sensing Nodes on a Space Frame Bridge** D. Zhu, J. Guo, Y. Wang, K-M Lee [Georgia Institute of Technology, USA]	y
14:45 ~ 15:05	**Development of a Bio-inspired Bridge Health Monitoring System** T-K Lin[1], C-A Tsai[2], M-Y Shen[2], K-C Chang[2], C-S Lin[1] [1) National Center for Research on Earthquake Engineering, Taiwan; 2) National Taiwan University, Taiwan]	y
15:05 ~ 15:25	**Towards Autonomous Wireless Sensors Systems in Civil Engineering. Paving the Way to an "Energy Oriented Design Method"** V. L. Cam[1], M. Lossec[2], R. L. Maulf[1], L. Lemarchand[1], W. Martin[1], M. Le Pen[1] [1) IFSTTAR, France; 2) ENS-Cachan/Bretagne, France]	y
15:25 ~ 15:45	**Radar Sensor based Accurate Tumor Tracking for Respiratory-Gated Lung Cancer Radiotherapy** C. Gu[1], R. Li[2], X. Yang[3], C. Li[1] S. B. Jiang[4] [1) Texas Tech University, USA; 2) Stanford University, USA; 3) University of Florida, USA; 4) University of California San Diego, USA]	y

Advanced Diagnostics for Damage Assessment - II

Chair: TBA

Location: HC 200-205

TIME		*PAGE NO.*
14:05 ~ 14:25	**Robust Diagnostics for Bayesian Compressive Sensing Technique in Structural Health Monitoring** Y. Huang[1], J. L. Beck[1], S. Wu[2], H. Li[2] [1) Harbin Institute of Technology, P.R.China; 2) California Institute of Technology, USA]	y
14:25 ~ 14:45	**Damage Monitoring and Evaluation for Building Structures Based on Measurement of Relative Story Displacements by Noncontact-Type Sensors** T. Hatada[1], M. Takahashi[1], R. Katamura[1], H. Hagiwara[1], I. Matsuya[2], K. Kanekawa[2], Y. Nitta[3], A. Nishitani[2] [(1) Kajima Corporation, Japan; 2) Waseda University, Japan; 3) Ashikaga Institute of Technology, Japan]	y
14:45 ~ 15:05	**Joint Condition Identification with Partially Measured Frequency Response Function** M. Wang, G. Zheng [Tsinghua University, China]	Y
15:05 ~ 15:25	**Multi-classifier Fusion Method Based on the Reliability of the Individual Classifiers** L. Al-Shrouf, D. Soeffker [University of Duisburg-Essen, Germany]	y
15:25 ~ 15:45	**Validation of a Hybrid Automated Modal Identification Algorithm for Structural Health Monitoring Applications** C. Rainieri, G. Fabbrocino [University of Molise, Italy]	y

SPECIAL SESSION

Wind Turbines Monitoring - II

Chair: W. Staszewski (Sheffield University, UK)

Chair: TBA

Location: HC 200-303

TIME		*PAGE NO.*
14:05 ~ 14:25	**Integrated Sensor System for Structural Integrity and Load Monitoring of Wind Turbines** T. Arsenault[1], A. Achuthan[1], P. Marzocca[1], D. Anguiano[2], D. Cardenas[2], H. Elizalde[2], O. Probst[2], G. Coppotelli[3] [(1) Clarkson University, USA; 2) Tecnológico de Monterrey, México; 3) University of Rome, Italy]	y
14:25 ~ 14:45	**A Full-scale Fatigue Test of 9-m CX-100 Wind Turbine Blades** G. Park, K. M. Farinholt, S. G. Taylor, C. R. Farrar [Los Alamos National Laboratory, USA]	y
14:45 ~ 15:05	**Assessment of Structural Monitoring Techniques for a Small Wind Turbine Test Stand** S. Manzato[1], M. Luczak[2], M. Firla[1], B. Peeters[1] [(1) LMS International, Belgium; 2) Polish Academy of Sciences, Poland]	y
15:05 ~ 15:25	**Structural Health Monitoring: An End User's Point of View** S. Pierre, M. Gautier, B. Sylvain [EDF R&D, France]	y
15:25 ~ 15:45	**PZT Active Frequency Based Wind Blade Fatigue to Failure Testing Results for Various Blade Designs** R. J. Werlink [NASA Kennedy Space Center, USA]	y

Operational Effects Consideration in SHM - II

Chair: TBA

Location: HC 200-305

TIME		*PAGE NO.*
14:05 ~ 14:25	**Measurement of Distributed Strain and Deformation and Load Identification using Optical Fiber Strain Sensors** K. Tachibana[1], H. Murayama[1], H. Igawa[2], T. Nakamura[2], J. Yokokawa[2] [(1) The University of Tokyo, Tokyo, Japan; 2) Japan Aerospace Exploratory Agency, Tokyo, Japan]	y
14:25 ~ 14:45	**Extension of the Generalized Unknown Input Kalman Filter for Online-Reconstruction of External Structural Loads** Y. Niu, M. Klinkov, C.-P. Fritzen [University of Siegen, Germany]	y

14:45 ~ 15:05	**Characterization of the Temperature Effect in Piezoelectric Transducer Patches Based on Fuzzy Clustering** C. G. Gonsalez[1], V. Lopes Junior[1], S. da Silva[1], F-K. Chang[2] [1) Univ Estadual Paulista - UNESP, Western Paraná State University, Brazil; 2) Stanford University, USA]	y
15:05 ~ 15:25	**An Efficient Temperature Compensation Technique for Guided Wave Ultrasonic Inspection** J.B. Harley, J.M.F. Moura [Carnegie Mellon University, USA]	y
15:25 ~ 15:45	**Machine Learning for Pipeline Monitoring Under Environmental and Operational Variations** Y. Ying, J. H. Garrett, Jr., J. Harley, J. M. F. Moura, N. O'Donoughue, I. J. Oppenheim, J. Shi, L. Soibelman [Carnegie Mellon University, USA]	y

Civil Infrastructures: Lab Demonstration - II

Chair: TBA

Location: ART 2

TIME		*PAGE NO.*
14:05 ~ 14:25	**Experimental Verification of Controlled Substructure Identification Using Control Devices: A Preliminary Simulation Study** C. DeVore[1], E. A. Johnson[1], R. Christenson[2] [1) University of Southern California, USA; 2) University of Connecticut, USA]	y
14:25 ~ 14:45	**High Frequency Axle Box Acceleration for Early Detection of Squats: Numerical Simulation, Prototype Development and Testing** Z. Li[1], M. Molodova[1], R. Dollevoet[2] [1) Delft University of Technology, The Netherlands; 2) ProRail, The Netherlands]	y
14:45 ~ 15:05	**A Comparison of Experimental Characterization Results for Multiple Bridge Spans of the Same Design** R. Maestri, T. Wank, K. A. Grimmelsman [University of Arkansas, USA]	y
15:05 ~ 15:25	**Damage Assessment with Time Series Analysis using a Wireless Sensors** M. Gul, T. Terrell, MJ Levy, F. N. Catbas [University of Central Florida, USA]	y
15:25 ~ 15:45	**An Ultrasonic Guided Wave Sensor for Gas Accumulation Detection in Nuclear Emergency Core Cooling Systems** L. Yu, Y. J. Shin, J. Wang, Y. Shen [University of South Carolina, USA]	y

SPECIAL SESSION

Monitoring of Civil Engineering Structures with MEMS - II

Chairs: C. Grosse (TU Munich, Germany), J. Lynch (Univ. of Michigan, USA)

Chair: TBA

Location: ART 4

TIME		*PAGE NO.*
14:05 ~ 14:25	**Modal Identification of Steel Bridges Using Wireless Sensor Network** S. Dorvash, S. N. Pakzad, R. C. Knorr, L. M. Horwath [Lehigh University, USA]	y
14:25 ~ 14:45	**Challenges and Possibilities of WSNs in the Dynamic Monitoring of Existent Structures** R. Aguilar[1], L. F. Ramos[2], P. B. Lourenço[2], R. Severino[3], R. Gomes[3], P. Gandra[3], M. Alves[3], E. Tovar[3] [1) Pontifical Catholic University of Perú, Perú; 2) University of Minho, Portugal; 3) Polytechnic Institute of Porto, Portugal]	y
14:45 ~ 15:05	**Acoustic Emission Sensors Circular Array for Concrete Structure Damaging Source DOA Estimation** Q. Wang, X. Liu [China Jiliang University, P.R. China]	y
15:05 ~ 15:25	**Towards a Digital Image Correlation Based Strain Sensor** M. Dutton, N. A. Hoult, W. A. Take [Queen's University, Canada]	y
15:25 ~ 15:45	**An Innovative Non-Contact ECG and Biopotential Sensor** Y. Sun, J. Berilla, X. (Bill) Yu [Case Western Reserve University, USA]	y

15:45 ~ 16:00	**Coffee Break** *Location: Dohrmann Grove*	

Panel Discussion		
TIME		***PAGE NO.***
16:00 ~ 17:15	**Chair: TBA** Panelists: TBA *Location: TBA*	

18:30 ~ 22:00	**SHM Networking Welcome Night** *Location: Frost Amphitheater*	

TECHNICAL PROGRAM

- POSTER SESSIONS -

Tuesday, September 13th

Poster Session

(Display starts at 9:40, Q&A Session : 13:00 ~ 14:05)

Location: Dohrmann Grove

TIME		PAGE NO.
9:40 ~ 14:05	**RAPID System for Hot Spot Corrosion Monitoring of Gas Pipelines** F. Li, G. Chang, S. Banerjee, M. Pappakostas, H. Chung, S. Beard [Acellent Technologies, Inc., USA]	y
9:40 ~ 14:05	**Mission and Scale Analysis on SHM of UAV's** M. Celebi [Turkish Air Force Academy, Turkey]	y
9:40 ~ 14:05	**Damage Monitoring Based on Wave Illumination of Structures** Y. Liu, N. Mechbal, M. Vergé [Arts et Métiers ParisTech, France]	y
9:40 ~ 14:05	**Structural Health Monitoring During Progressive Damage Test of S101 Bridge** M. Döhler[1], F. Hille[2], L. Mevel[1], W. Rücker[2] [1) INRIA, Campus de Beaulieu, Rennes, France; 2) BAM, Division Buildings and Structures, Berlin, Germany]	y
9:40 ~ 14:05	**Fatigue Crack Detection Using Guided Waves and Probability-based Imaging Approach** M. Lu[1], X. Lu[2], L. Zhou[1], Z. Su[1], L. Ye[3], F. Li[2] [1) The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR; 2) Shanghai Jiao Tong University, Shanghai, China 3) University of Sydney, Australia]	y
9:40 ~ 14:05	**Experimental Investigation of the Excitation Level in System Identification of Frame Structures Using Linear Shakers** N. Nakata, K. Coleman [Johns Hopkins University, USA]	y
9:40 ~ 14:05	**Simulation Method of Selection of Diagnostic Parameters in the Process of Monitoring the Rail Vehicle's Conditions** A. Chudzikiewicz, B. Sowinski [Warsaw University of Technology, Poland]	y
9:40 ~ 14:05	**Identifying Foundation Impedance Properties from Seismic Records** A. Irizarry[1], D. Bernal[2], L. Suárez[1] [1) University of Puerto Rico at Mayaguez, Puerto Rico; 2) Northeastern University at Boston, USA]	y
9:40 ~ 14:05	**Self Focusing of 2D Arrays for SHM of Plate-Like Structures Using Time Reversal Operator** L. Ambrozinski[1], T. Stepinski[2], T. Uhl[1] [1) AGH University of Science and Technology, Poland; 2) Uppsala University, Sweden]	y
9:40 ~ 14:05	**Understanding The Effects of a Breathing Crack on the Dynamic Response of Cantilever-type Structures for Damage Detection** A.U. Rehman, K. Worden, J. A. Rongong [University of Sheffield, UK]	y
9:40 ~ 14:05	**Finite Element Driven Damage Detection of a Skewed Highway Bridge with Pin and Hanger Assemblies** A. A. Mosavi, H. Sedarat, A. Emami-Naeini, V. Jacob, A. Krimotat, J. Lynch [SC Solutions, Inc, USA]	y
9:40 ~ 14:05	**A System for Static and Dynamic Monitoring of Ice-Sport Arena** G. Boldyrev, A. Zhivaev [NPP Geotek Ltd, Russia]	y
9:40 ~ 14:05	**Wireless, Batteryless Distributed Strain Sensing for Structural Health Monitoring** C. Palmer[1], A. Gutterman[1], G. Argenna[1], V. Inclan[2], A. Zyuzin[2] [1) Impact Technologies LLC, USA; 2) Illionix LLC, USA]	y
9:40 ~ 14:05	**High Sampling Rate Fiber-Optic Extensometry for Ultrasonic Wave Detection** C. E. García, J. A. Güemes, A. Fernández [Polytechnic University of Madrid, Spain]	y
9:40 ~ 14:05	**Application of Polarization-maintaining Fiber Bragg Grating to Optical Frequency Domain Reflectometry for Simultaneous Measurements of Strain and Temperature Distributions** D. Wada, H. Murayama, H. Igawa, K. Omichi and K. Kageyama [The University of Tokyo, Japan]	y
9:40 ~ 14:05	**Simulation Platform for UWB Impulse Radio Wireless Sensor Networks Dedicated to Aeronautic Applications** D. Dragomirescu[1], A. Thain[2], F. Camps[1], F. Perget[1], A. Lecointre[1], A. Berthe[1], R. Plana[1] [1) University of Toulouse, France; 2) EADS Innovation Work, Austria]	y

9:40 ~ 14:05	**Versatile and Easy-to-Assemble Measurement System for Impedance-Based Structural Health Monitoring** F.G. Baptista[1], J.V. Filho[1], N. Oki[1], A.E. Turra[1], V. Lopes Jr.[1], D.J. Inman[2] [1) Sao Paulo State University, Brazil; 2) Virginia Tech, USA]	y
9:40 ~ 14:05	**Fiber-Optic Extensometer Array in a Small Alcove at 1.25-km Depth in the Sanford Laboratory at Homestake, Lead, South Dakota** H. F. Wang[1], J.R. Gage[1], D. O. Fratta[1], M. M. MacLaughlin[2], A. Turner[3] [1) U. Wisconsin-Madison, USA; 2) Montana Tech, USA; 3) Micron Optics Inc, USA]	y
9:40 ~ 14:05	**Overview of the European FP 7 Project "Aircraft Integrated Structural Health Assesment II" with Focus on the Detection of Corrosive and Hydraulic Liquids by Gauges on the Collapse of Percolation Conductivity** H. Pfeiffer, M. Wevers [Katholieke Universiteit Leuven, Belgium]	y
9:40 ~ 14:05	**Inherently Conductive Polymer Based Structure Health Monitoring Sensor for Composite** H. Yang, A. K. Singh, B. W. Pitts, G. J. Tregre, P. J. Kinlen [Crosslink, USA]	y
9:40 ~ 14:05	**Inter-digitized Transducers (IDTs) for Structural Health Monitoring (SHM) Applications** J. K. Na[1], S. Kuhr[2], Carl Druffner[3] [1) Edison Welding Institute, USA; 2) University of Dayton Research Institute, USA; 3) Mound Laser and Photonics Center, USA]	y
9:40 ~ 14:05	**Acoustic Emission Evaluation of Cavitation Erosion in Hydraulic Turbines** F. R. Queiroz[1], E. B. Medeiros[2], L. V. Donadon[2], M. T. Corrêa de Faria[2] [1) CTE.O Furnas Centrais Elétricas, Brazil; 2) UFMG, Brazil]	y
9:40 ~ 14:05	**Anomalous Wave Propagation Imaging with Adjacent Wave Subtraction: Composite Wing Application** C. C. Chia[1], J. R. Lee[1], C. Y. Park[1], He. J. Shin[2] [1) Chonbuk National University, Korea; 2) Aeronautical Technology Directorate, Agency for Defense Development, Korea]	y
9:40 ~ 14:05	**Application of Fuzzy Set Theory in Structural Health Monitoring to Pattern Different States of an RC Bridge at Interstate 40** M. Azarbayejani[1], M. R. Taha[2] [1) University of Texas-Pan American, USA; 2) University of New Mexico, USA]	y
9:40 ~ 14:05	**Experimental Broadband Estimation of Guided Waves Group Velocity with High Signal to Noise Ratio** N. Quaegebeur, P. Masson, P. Micheau, N. Mrad [Universite de Sherbrooke, Canada]	y
9:40 ~ 14:05	**Image Processing Technique for Vibrothermographic Field Tests** M. Szwedo, L. Pieczonka, T. Uhl [AGH University of Science and Technology, Poland]	y
9:40 ~ 14:05	**A Time Domain Spectral Element for Coupled Piezoelectric Actuator/Sensor with Complex Thin-walled Assembly Structures** Ramy Mohamed and Patrice Masson [Univeristé de Sherbrooke, Canada]	y
9:40 ~ 14:05	**Structural Health Monitoring System Based on Electromechanical Impedance Measurements** M. Rosiek, A. Martowicz, T. Uhl [AGH University of Science and Technology, Poland]	y
9:40 ~ 14:05	**Monitoring of 3D Composite Structures Using Fiber Optic Bragg Grating Sensors** M. Dvořák, J. Had, M. Růžička, Z. Pošvář [Czech Technical University in Prague, Czech Republic]	y
9:40 ~ 14:05	**Wavelet-based SVM System for Evaluation of Wear States and Remaining Life Time** Mahmud-Sami Saadawia, Dirk Söffker [University of Duisburg-Essen, Germany]	y
9:40 ~ 14:05	**Adaptive Fuzzy-based Approach for Classification of System's States** H. Aljoumaa, D. Söffker [University of Duisburg-Essen, Germany]	y
9:40 ~ 14:05	**Distributed Optical Fiber Sensing for Wind Blade Strain Monitoring and Defect Detection** A. M. Kaplan, S. M. Klute, D. K. Gifford, A. D. Heaney [Luna Innovations Incorporated]	y
9:40 ~ 14:05	**Uncertainty Assessment in Structural Health Monitoring** S.Sankararaman, S. Mahadevan [Vanderbilt University, USA]	y
9:40 ~ 14:05	**Characterization of an Elastomer Based Autonomous Sensing-Actuating System** S. Raghavan, M. B. Subbanna [Hindustan Aeronautics Limited, India]	y
9:40 ~ 14:05	**Analysis of Bearing Damage Using a Multibody Model and a Test Rig for Validation Purposes** W. Jacobs[1], M. Malago[2], R. Boonen[1], D. Moens[1], P. Sas[1] [1) Catholic University of Leuven, Belgium; 2) Universitá degli studi di Ferrara, Italy]	y

9:40 ~ 14:05	**Design of a Wheeled Climbing Robot for Automatic Inspection of Hydraulic Turbine Blade with Curved Surface** Z. Wu[1,2], Q. Chen[1] , Z. Sun[1], W. Zhang[1] [1) Tsinghua University, China; 2) University of California, Berkeley, USA]	y
9:40 ~ 14:05	**An Optimal Image-based Method for Identification of AE Sources on Plate Structure** G. Yan, L. Zhou [Nanjing University of Aeronautics and Astronautics, China]	y
9:40 ~ 14:05	**Residual Life Prediction of Steel I-beams Using Acoustic Emission and Back Propagation Neural Networks** Y. Zhang, F. Barsoum, E. Hill, Y. Kwan, A. Korcak [Embry-Riddle Aeronautical University, Florida, USA]	y

Special Poster Session:
National Institute of Standards & Technology (NIST) - Technology Innovation Program

(Display starts at 9:40, Q&A Session : 13:00 ~ 14:05)

Location: Dohrmann Grove

TIME		PAGE NO.
9:40 ~ 14:05	**Early Concrete Bridge Deck Deterioration Detection and Rehabilitation by ANDERS** N. Gucunski [Rutgers University, USA]	y
9:40 ~ 14:05	**Detection and Characterization of Chloride Induced Corrosion on Steel Reinforcement by Acoustic Emission** M. Gonzalez-Nunez, S. Momeni, A. Pollock, R. Gostautas [Mistras Group Inc., USA]	y
9:40 ~ 14:05	**Development of a Mobile Acoustic Air-coupled Subsurface Sensing System for Pavement Property Detection** Y. Lu, Y. Cao, Y. Zhang, G. McDaniel, M. L. Wang [Northeastern University, USA]	y
9:40 ~ 14:05	**Improving the Acquisition Speed of Ground Penetrating Radar Systems** R. Birken, C. Oden, D. Huston, T. Xia [Northeastern University, USA]	y
9:40 ~ 14:05	**Use of Parabolic Reflectors for Signal Amplification in Air-coupled Impact-Echo Testing** J. Zhu [University of Texas at Austin, USA]	y
9:40 ~ 14:05	**Simulation of In-air Waves Generated by the Zero-Group-Velocity S1 Lamb Mode** J. Zhu [University of Texas at Austin, USA]	y
9:40 ~ 14:05	**Damage Tracking on a Fracture Critical Bridge** J. Fasl, A. A. Yousef [University of Texas at Austin, USA]	y
9:40 ~ 14:05	**Passive, Wireless Corrosion Sensors for Reinforced Concrete Structures** J. Fasl, A. A. Yousef [University of Texas at Austin, USA]	y
9:40 ~ 14:05	**Distributed Multi-parameter Fiber-optic Sensor for Water Infrastructure Monitoring** Y. Zadorozhny [Optellios, Inc., USA]	y
9:40 ~ 14:05	**Development of a Multiscale Monitoring and Health Assessment Framework for Effective Management of Levees and Flood-Control Infrastructure Systems** M. Zeghal [Rensselaer Polytechnic Institute, USA; Geocomp, USA]	y
9:40 ~ 14:05	**Wireless Monitoring of the New Carquinez Bridge** J. Lynch [University of Michigan, USA]	y
9:40 ~ 14:05	**Finite-Element Driven Damage Detection of the Telegraph Road Bridge** A. Mosavi [SC Solutions, USA]	y
9:40 ~ 14:05	**Characterization of AE Source Mechanisms for Fatigue Crack Growth in Steel Bridges** M. Hossain, J. Yu, P. Ziehl [University of South Carolina, USA]	y
9:40 ~ 14:05	**Wind Harvesting for Running SHM Systems** M. A. Karami, J. Farmer, D. J. Inman [Virginia Tech, USA]	y

TECHNICAL PROGRAM

Wednesday, September 14th

Keynotes

Chair: TBA

Location: Memorial Auditorium

TIME		*PAGE NO.*
08:30 ~ 09:00	**The Journey to Incorporate Health Monitoring and Condition Based Maintenance on Sikorsky Commercial Helicopters** Jim Cycon [Sikorsky, USA]	y
09:00 ~ 09:30	**Embraer Perspective on the Introduction of SHM into Current and Future Commercial Aviation Programs** Luis G. dos Santos [Embraer, Brazil]	y
09:30 ~ 10:00	**TBA** Peter Foote [BAE Systems, USA]	

10:00 ~ 10:20	**Coffee Break** *Location: Dohrmann Grove*	

Aerospace Structures: Field Evaluation and Validation - III & AISC-Guidebook Development Panel Session (30 min)

Chair: TBA

Location: HC 200-002

TIME		*PAGE NO.*
10:20 ~ 10:40	**Numerical Predictions of Elastic Wave Scattering from a Sub-surface Defect in an F-111 Wing Skin** W.H. Ong[1], W.K. Chiu[1], S.C. Rosalie[2], N. Rajic[2] [1) Department of Mechanical & Aerospace Engineering, Monash University, Australia; 2) Defence Science & Technology Organisation, Air Vehicles Division, Australia]	y
10:40 ~ 11:00	**Real-Time Condition Assessment of RAPTOR Telescope Systems** C. J. Stull, S. G. Taylor, J. Wren, D. L. Mascareñus, C. R. Farrar [Los Alamos National Laboratory, USA]	y
11:00 ~ 11:20	**Autonomous Battery-less Wireless Strain Gage for Structural Health Monitoring** V. Olariu[1], A. Gnadinger[1], J. Bao[2], V. Giurgiutiu[2] [1) Albido Corporation, USA; 2) University of South Carolina, USA]	y
11:20 ~ 11:50	**AISC-Guidebook Development Panel Session (30 min)**	

Sensors and Actuators Development - III

Chair: TBA

Location: HC 200-030

TIME		*PAGE NO.*
10:20 ~ 10:40	**Piezoelectric Paint as Spatially Distributed Modal Sensors** C. Yang, C.-P. Fritzen [University of Siegen, Germany]	y
10:40 ~ 11:00	**Towards Smart Sonar Transducers Polarimetric Sensing for Sonar Array Compensation** S. G. Pierce, G. M. H. Flockhart, M. McGuire, A. Bennecer, G. Hayward, G. Thursby, G. Stewart, B. Culshaw [University of Strathclyde, UK]	y
11:00 ~ 11:20	**RF-powered Wireless Strain Sensor** Y. Hew, A. Yu, H. Huang [University of Texas at Arlington, USA]	y

11:20 ~ 11:40	**Flexible Integration Techniques for Wireless Sensors Network Deployment: Application to Aircraft Structure Health Monitoring** D. Dragomirescu, M. M. Jatlaoui, S. Charlot, T. Beluch, P. Pons, H. Aubert, R. Plana [University of Toulouse, France]	y
11:40 ~ 12:00	**Detecting the Debonding of Adhesively Mounted Sensors in an Optimally Designed Structural Health Monitoring System** M. K. Jones, D. L. Parker [Miltec Research & Technology, USA]	y

SPECIAL SESSION

Verification and Validation of Damage Sensing - I

Chair: E. Medina (AFRL, USA)

Chair: TBA

Location: HC 200-034

TIME		*PAGE NO.*
10:20 ~ 10:40	**On the Performance Quantification of Active Sensing SHM Systems using Model-assisted POD Methods** I. Mueller[1], V. Janapati[1], S. Banerjee[2], K. Lonkar[1], S. Roy[1], F.-K. Chang[1] [1) Stanford University, USA; 2) Acellent Technologies Inc., USA]	y
10:40 ~ 11:00	**Certification in Structural Health Monitoring Systems** C. M. Schubert Kabban[1], Mark Derriso[2] [1) Air Force Institute of Technology and Air Force Research Lab, USA; 2) Air Force Research Laboratory, USA]	y
11:00 ~ 11:20	**Model Assisted Probability of Detection Evaluation of a Health Monitoring System by using CUDA Technology** A. Gallina[1], P. Packo[1], L. Ambrozinski[1], T. Uhl[1], W.J. Staszewski[2] [1) AGH-UST, Poland; 2) Sheffield University, UK]	y
11:20 ~ 11:40	**The Need and Requirements for Validating Damage Detection Capability** E. A. Lindgren, C. F. Buynak [Air Force Research Laboratory, USA]	y
11:40 ~ 12:00	**Protocol for Reliability Assessment of Structural Health Monitoring Systems Incorporating Model-assisted Probability of Detection (MAPOD) Approach** J. C. Aldrin[1], E. A. Medina[2], E. A. Lindgren[2], C. F. Buynak[2], J. S. Knopp[2] [1) Computational Tools, Gurnee, USA; 2) Air Force Research Laboratory, Wright-Patterson AFB, USA]	y

Prognostics and Data Mining for Health Management - II

Chair: TBA

Location: HC 200-203

TIME		*PAGE NO.*
10:20 ~ 10:40	**Impact Damage Characterisation using a Statistical Approach** M.T.H. Sultan[1], K. Worden[2], W.J. Staszewski[2] [1) University Putra Malaysia, Malaysia; 2) University of Sheffield, UK]	y
10:40 ~ 11:00	**Accelerated Aging Experiments for Prognostics of Damage Growth in Composite Materials** A. Saxena[1], K. Goebel[1], C. C. Larrosa[2], V. Janapati[2], S. Roy[2], F.-K. Chang[2] [1) NASA Ames Research Center, USA; 2) Stanford University, USA]	y
11:00 ~ 11:20	**Prognostics and Diagnostics of Rotorcraft Bearings** M. Haile, A. Ghoshal, D. Le [US Army Research Laboratory, USA]	y
11:20 ~ 11:40	**Bayesian Sensitivity Analysis of Numerical Models for Structural Health Monitoring** R. J. Barthorpe [The University of Sheffield, U.K.]	y
11:40 ~ 12:00	**Adaptive Classification Based on Multisensor Decision** L. Al-Shrouf[1], M. S. Saadawia[1], N. Szczepanski[2], D. Söffker[1] [1) University of Duisburg-Essen, Germany; 2) Mines Engineering Centre, Germany]	y

Advanced Diagnostics for Damage Assessment - III

Chair: TBA

Location: HC 200-205

TIME		*PAGE NO.*
10:20 ~ 10:40	**Power Losses in PZT Disk Actuators' Adhesive** R. Dugnani [Exponent Failure Analysis Associates, USA]	y
10:40 ~ 11:00	**Sensitivity of the Excitelet Imaging Algorithm on Material Properties for Isotropic Structures** P.-C. Ostiguy, P. Masson, N. Quaegebeur, S. Elkoun [Universite de Sherbrooke, Canada]	y
11:00 ~ 11:20	**Damage Detection Index Based on Statistical Inference and PCA** L. E. Mujica, M. Ruiz, F. Pozo and J. Rodellar [Universitat Politècnica de Catalunya, Spain]	y
11:20 ~ 11:40	**Effective Damage Sensitive Feature Extraction Methods for Crack Detection using Flaw Scattered Ultrasonic Wave Field Signal** S. K. Yadav[1], S. Banerjee[2] and T. Kundu[1] [1) University of Arizona, USA; 2) Acellent Technologies Inc, USA]	y
11:40 ~ 12:00	**Time-Domain Localized Structural Damage Identification with Incomplete Excitation Measurements** J. He, B. Xu [Hunan University, China]	y

Quantification / Validation / Certification

Chair: TBA

Location: HC 200-303

TIME		*PAGE NO.*
10:20 ~ 10:40	**Sensor Location Analysis for Fatigue Crack Detection Using Nonlinear Acoustics** R. B. Jenal[1], W. J. Staszewski[1,2], A. Klepka[2] and T. Uhl[2] [1) Sheffield University, UK; 2) AGH University of Science and Technology, Poland]	y
10:40 ~ 11:00	**Uncertainty Quantification and Validation of Finite Element Models of Bridge Structures** J. Marin, M. Nishio, Y. Fujino [The University of Tokyo, Japan]	y
11:00 ~ 11:20	**Identification of the Stiffness Distribution Using BOTDR** Y. Goldfeld, A. Klar [Technion - Israel Institute of Technology, Israel]	y
11:20 ~ 11:40	**Co-bonding of Piezoelectric Sensors on CFRP Structures** M. Bach[1], B. Eckstein[1], N. Jacquel[2], R. Bertrand [2], C. Stolz[3] [1) EADS Innovation Works, Germany; 2) Airbus Operations GmbH, Germany; 3) CASSIDIAN, Germany]	y
11:40 ~ 12:00	**Development of Probability of Detection Data for Structural Health Monitoring Damage Detection Techniques Based on Acoustic Emission** D. O. Gagar[1], P. E. Irving[1], I. Jennions[1], P. Foote[2], I. Read[2], J. McFeat[3] [1) Cranfield IVHM Centre, BAE Systems, UK; 2) BAE Systems, ATC Sowerby, Bristol, UK; 3) BAE Systems, Warton Aerrodrome, Lancashire, UK]	y

Novel Signal Processing Techniques - I

Chair: TBA

Location: HC 200-305

TIME		*PAGE NO.*
10:20 ~ 10:40	**Real-Time Characterization of Aerospace Structures Using Onboard Strain Measurement Technologies and Inverse Finite Element Method** A. Tessler[1], J. L. Spangler[2], M. Mattone[3], M. Gherlone[3], M. Di Sciuva[3] [1) NASA Langley Research Center, USA; 2) Lockheed Martin Aeronautics Company, USA; 3) Politecnico di Torino, Italy]	y
10:40 ~ 11:00	**Impact Echo Signal Interpretation Using Ensemble Empirical Mode Decomposition** Z. Xie, X. Wei, Y. Zhang [Georgia Institute of Technology, USA]	y
11:00 ~ 11:20	**Mode Conversion Estimation of Filleted T-Joint Using FEM and 3D Laser Vibrometry** J.T. Ayers[1], E. Swenson[2], M. Ruzzene[3], A. Ghoshal[1] [1) Army Research Laboratory, USA; 2) AFIT/ENY, USA; 3) Georgia Institute of Technology, USA]	y
11:20 ~ 11:40	**Detection of Impact Strain Waves in Composites by High-Speed FBG Sensor System with AWG Filter** Y. Okabe[1], N. Watanabe[1], M. Shimazaki[1], H. Soejima[2], T. Ogisu[2] [1) The University of Tokyo, Japan; 2) Fuji Heavy Industries Ltd., Japan]	y
11:40 ~ 12:00	**The Application of Compressed Sensing to Detecting Damage in Structures** D. Mascarenas, D. Hush, J. Theiler, C. Farrar [Los Alamos National Laboratory, USA]	y

Civil Infrastructures: Field Evaluation and Validation - I

Chair: TBA

Location: ART 2

TIME		*PAGE NO.*
10:20 ~ 10:40	**Self Powered Wireless Sensor Network for Structural Bridge Health Prognosis: Achievements in the first Two Years** V. Godinez[1], A. Pollock[1], M. Gonzalez[1], S. Momeni[1], R. Gostautas[1], R. Fustos[1], B. Newlin[1], D. Inman[2], J. Farmer[2], S. Priya[2], P. Zielh[3], J. Caicedo[3], B. Zarate[3], L. Yu[3], V. Giurgiutiu[3], A. Nanni[4] [1) Mistras Group Inc., USA; 2) Virginia Tech, USA; 3) University of South Carolina, USA; 4) University of Miami, USA]	y
10:40 ~ 11:00	**Fatigue Crack Monitoring with an Ultrasonic Sparse Array on a Real Steel Structure Component** M. Vospernig[1], R. Heuer[2], M. Reiterer[1] [1) RED BERNARD GmbH, Austria; 2) Vienna University of Technology, Austria]	y
11:00 ~ 11:20	**Challenges and Strategies in Remote Sensing Implementation for Bridge Monitoring** S-E Chen[1], E. Hauser[1], K. Rehm[2] and C. Boyle[3] [1) University of North Carolina at Charlotte, USA; 2) AASHTO, USA; 3) Boyle Consulting Inc., USA]	y
11:20 ~ 11:40	**An Innovative method to measure bridge deflection using simple telecom fiber** P. Kung , L. Wang [QPS Photronics Inc., Canda]	y
11:40 ~ 12:00	**Diagnostic Performance Indication through Field Testing of a Bridge Superstructure** M. V. Gangone[1], M. J. Whelan[2], K. D. Janoyan[1] [1) Clarkson University, USA; 2) University of North Carolina at Charlotte, USA]	y

SPECIAL SESSION

Structural Health Monitoring of Wind Turbines

Chair: J. R. White (Sandia National Laboratories)

Chair: TBA

Location: ART 4

TIME		*PAGE NO.*
10:20 ~ 10:40	**Inertial Energy Harvester for Monitoring Wind Turbine Blades** B. Joyce; J. Farmer; D. J. Inman [Virginia Tech, USA]	y
10:40 ~ 11:00	**Load Shaping for Maximizing Energy Capture and Structural Health in a HAWT using Rotor-Mounted Inertial Sensors** J. Yutzy, D. E. Adams [Purdue Center for Systems Integrity, USA]	y
11:00 ~ 11:20	**Passive Damage Monitoring of Wind Turbine Rotor Blades Using Cyclic Signal Processing** J. R. White [Sandia National Laboratories, USA]	y
11:20 ~ 11:40	**Vibration Based Damage Detection for Structures of Offshore Wind Energy Plants** C. Fritzen, P. Kraemer [University of Siegen, Germany]	y
11:40 ~ 12:00	**Investigation of Various Condition Monitoring Techniques Based on a Damaged Wind Turbine Gearbox** S. Sheng [NREL, USA]	y

12:00 ~ 13:00	**Lunch at the Oval** *Location: The Oval*	

Aerospace Structures: Laboratory Demonstration - I

Chair: TBA

Location: HC 200-002

TIME		*PAGE NO.*
13:00 ~ 13:20	**Monitoring the Degradation by Fire of Composite Laminates by Embedded FBG Sensors** A. Güemes, C. E. Garcia-Gonzalez, I. Gonzalez-Requena, C. De Miguel-Giraldo [Technical University of Madrid, Spain]	y
13:20 ~ 13:40	**Nonlinear Ultrasonic Techniques for Nondestructive Damage Assessment in Metallic Materials** J.-Y. Kim[1], L. J. Jacobs[1], J. Qu[2] [1) Georgia Institute of Technology, USA; 2) Northwestern University, USA]	y

13:40 ~ 14:00	**Hierarchical Sensing System Combining a Fiber-Optic Network and Distributed Built-In Capillary Sensors for Impact Damage Monitoring of CFRP Structures** H. Banshoya, S. Minakuchi, N. Takeda [The University of Tokyo, Japan]	y
14:00 ~ 14:20	**Waveguided and Noncontacting Thermoacoustic Sensing of Thermal Protection Systems** D. Huston, D. Hurley, D. Fletcher, W. Owens [University of Vermont, USA]	y

Sensors and Actuators Development - IV

Chair: TBA

Location: HC 200-030

TIME		*PAGE NO.*
13:00 ~ 13:20	**Power Management in a Wireless Sensor for Structural Monitoring Application** S. Casciati[1], L. Faravell[2], Z. Chen[2] [1) University of Catania at Syracuse, Italy; 2) University of Pavia, Italy]	y
13:20 ~ 13:40	**Integrating Diamond Sensors in Silicon Technology Integrated Circuits** T. Sanders[1], G.Hess[1], J. Davidson[2] [1) AET Inc., USA; 2) Vanderbilt University, USA]	y
13:40 ~ 14:00	**Development of a Bi-Axial Accelerometer Based on Intensity Modulated Plastic Optical Fiber for Wind Turbine Monitoring** Y. Ge, S.T. Quek, K.S.C. Kuang [National University of Singapore, Singapore]	y
14:00 ~ 14:20	**Intelligent Structural Health Monitoring Using Carbon Nanomaterial Networks** S.W. Kim, S. H. Hwang, Y. B. Park [Ulsan National Institute of Science and Technology (UNIST), Republic of Korea]	y

SPECIAL SESSION

Verification and Validation of Damage Sensing - II

Chair: E. Medina (AFRL, USA)

Chair: TBA

Location: HC 200-034

TIME		*PAGE NO.*
13:00 ~ 13:20	**Demonstration of Model Assisted Reliability Assessment Protocol on a Proposed Low Frequency Vibration Based Damage Sensing Case** E. A. Medina[1], J. C. Aldrin[2], J. Santiago[3], E. A. Lindgren[1], C. F. Buynak[1], J. S. Knopp[1] [1) Air Force Research Laboratory, USA; 2) Computational Tools, USA; 3) Consultant Aventura, USA]	y
13:20 ~ 13:40	**Challenges and Approach for SHM Technology Transition** S. Beard, S. Banerjee [Acellent Technologies, Inc., USA]	y
13:40 ~ 14:00	**FAA Research & Development Efforts in SHM** P. Swindell, D. Roach, I. Won [FAA, USA]	y
14:00 ~ 14:20	**Condition-Based Maintenance Plus and Maintenance Credit Validation** D. D. Le[1], A. Ghoshal[1], E. Cuevas[2] [1) US Army Research Laboratory, USA; 2) Federal Aviation Administration,USA]	y

Prognostics and Data Mining for Health Management - III

Chair: TBA

Location: HC 200-203

TIME		*PAGE NO.*
13:00 ~ 13:20	**Artificial Neural Network Based Damage Detection From Lamb Wave Response** A. Baranwal, M. Mitra [IIT Bombay, India]	y
13:20 ~ 13:40	**Integration of Data Mining Operations for Structural Health Monitoring** E. Sonnleitner[1], H. Kosorus[1], S. Anderlik[1], R. Stumptner[1], B. Freudenthaler[2], H. Allmer[3], J. Kung[1] [1) Johannes Kepler University, Linz, Austria; 2) Software Competence Center, Hagenberg, Austria; 3) VCE Holding GmbH, Wien Austria]	y
13:40 ~ 14:00	**Multiple Information Agents for Real-Time ISHM: Architectures for Real-Time Warfighter Support** J. A. Crowder [Raytheon Intelligence and Information Systems, USA]	y
14:00 ~ 14:20	**Integration of Structural Health Monitoring and Fatigue Damage Prognosis** Y. Ling, S. Mahadevan [Vanderbilt University, USA]	y

SPECIAL SESSION

Intelligent Sensor Networks for SHM - I

Chairs: J. Lynch (Univ. of Michigan, USA), A. Swartz (Michigan Techn. Univ., USA)

Chair: TBA

Location: HC 200-205

TIME		*PAGE NO.*
13:00 ~ 13:20	**Autonomous Structural Condition Monitoring Based on Dynamic Code Migration and Cooperative Information Processing in Wireless Sensor Networks** K. Smarsly[1], K. H. Law[1], M. König[1] [1) Stanford University, USA; 2) Ruhr-University Bochum, Germany]	y
13:20 ~ 13:40	**An Intelligent Wireless Structural Health Monitoring Solution for Urban Search and Rescue** A. Zimmerman[1], J. Lynch[2], G. Zussman[3], D. Rubenstein[3] [1) Civionics, LLC, USA; 2) University of Michigan, USA; 3) Columbia University, USA]	y
13:40 ~ 14:00	**Towards Low-Cost Structural Health Monitoring with Sensor Networks in Earthquake Damage Detection** T. Fujiwara[1], H. S. Ulusoy[2], M. Q. Feng[2] [1) Hakodate National College of Technology, Japan; 2) University of California Irvine, USA]	y
14:00 ~ 14:20	**Novel Optical-Fiber-Based Cure Monitoring Technique for Large-scale Composite Structures by Hybrid Brillouin-Rayleigh System** Y. Ito, K. Fujimoto, S. Minakuchi, T. Mizutani, N. Takeda [The University of Tokyo, Japan]	y

Advanced Monitoring for Load / Environments

Chair: TBA

Location: HC 200-303

TIME		*PAGE NO.*
13:00 ~ 13:20	**Design of a Self-powered Load Monitoring System for Hot Spot Applications** Y. Y. Lin[1], Minoru Taya[1], J.B. Ihn[2] [1) University of Washington, USA; 2) Boeing Research & Technology, USA]	y
13:20 ~ 13:40	**A Robust Impact-force Determination Technique for Complex Structures** I. Mueller[1], K. Vonnieda[1], S. Das[2], F.-K. Chang[1] [1) Stanford University, USA; 2) Acellent Technologies Inc., USA]	y
13:40 ~ 14:00	**Analytical Formulation for the Determination of Torsional Forces and Shear Stresses in Hydraulic Steel Structures From Field Experiments** A. J. Alicea[1], G. Riveros[2] [1) University of Puerto Rico at Mayaguez, USA; 2) U.S. Army Corps of Engineers - Engineer Research and Development Center, USA]	y
14:00 ~ 14:20	**Experimental Evaluation of a Wavelet-Based FEM and its Application to Load History Identification** M.M. Mota, L. Pahlavan, C. Kassapolgou [Delft University of Technology, The Netherlands]	y

Novel Signal Processing Techniques - II

Chair: TBA

Location: HC 200-305

TIME		*PAGE NO.*
13:00 ~ 13:20	**Measuring the Average Thickness of a Plate Using a Bayesian Method and Free Vibration Data** E. Z. Moore[1], K. D. Murphy[1], J. M. Nichols[2] [1) University of Connecticut, USA; 2) U.S. Naval Research Lab, USA]	y
13:20 ~ 13:40	**Morphological Filtering of SHM Datasets** D. K. McNeill[1], M. Soiferman[2] [1) University of Manitoba, Canada; 2) YRT Ltd., Canada]	y
13:40 ~ 14:00	**Examination of Wear Phenomena by using Filtering Techniques for FDI Purposes** K.-U. Dettmann, D. Baccar, D. Soeffker [University of Duisburg-Essen, Germany]	y
14:00 ~ 14:20	**Automated Data Interpretation for Modal Identification of a Truss Bridge** J. Zhang[1], F.L. Moon[2], E.M. Aktan[2] [1) Southeast University, China; 2) Drexel University, USA]	y

Civil Infrastructures: Field Evaluation and Validation - II

Chair: TBA

Location: ART 2

TIME		*PAGE NO.*
13:00 ~ 13:20	**Development of Reliable and Low-Power Wireless Health Monitoring Systems for Highway Bridges** D. Potter[1], J. Fasl[2], V. Samaras[2], T. Helwig[2], S. Wood[2], R. Lindenberg[3], K. Frank[4] [1) National Instruments, USA; 2) University of Texas at Austin, USA; 3) Wiss, Janney, Elstner Associates, Inc., USA; 4) Hirschfeld Industries, USA]	y
13:20 ~ 13:40	**Design and Application of a Wireless Sensor Network for Vibration-Based Performance Assessment of a Tied Arch Bridge** M. J. Whelan [UNC Charlotte, USA]	y
13:40 ~ 14:00	**Risk Based Civil SHM and Life Cycle Management** H. Wenzel, R. Veit-Egerer, M. Widmann [Vienna Consulting Engineers, Austria]	y
14:00 ~ 14:20	**Integration of SHM into Bridge Management Systems: Case Study – Z24 Bridge** E. Figueiredo[1], L. Radu[1], G. Park[2], C. Farrar[2] [1) Catholic University of Portugal, Portugal; 2) Los Alamos National Laboratory, USA]	y

SPECIAL SESSION

Advanced SHM for Ship Structures

Chair: L. Salvino (US Navy, USA)

Chair: TBA

Location: ART 4

TIME		*PAGE NO.*
13:00 ~ 13:20	**Compressive Sensing Approach for Structural Health Monitoring of Ship Hulls** S. M. O'Connor, J. P. Lynch, A. C. Gilbert [University of Michigan, USA]	y
13:20 ~ 13:40	**Structural Damage Identification in Stiffened Plate Fatigue Specimens using Piezoelectric Active Sensing** B. L. Grisso[1], G. Park[2], L. W. Salvino[1], C. R. Farrar[2] [1) Naval Surface Warfare Center, Carderock Division, USA; 2) Los Alamos National Laboratory, USA]	y
13:40 ~ 14:00	**Health Monitoring of Aluminum Weldings with the Surface Response to Excitation (SuRE) Approach** I. N. Tansel[1], B. L. Grisso[2], G. Singh[1], G. Singh[1], S. Korla[1], L. W. Salvino[2] [1) Florida International University, USA; 2) NSWC Carderock Div., USA]	y
14:00 ~ 14:20	**Distributed Sensor Network for Structural Health Monitoring of Ships** B. W. Roeder, R. R. Klug [McQ Inc., USA]	y

14:20 ~ 14:40	**Coffee Break** *Location: Dohrmann Grove*	

SHM in Action

TIME		*PAGE NO.*
14:40 ~ 17:00	Chair: TBA *Location: Memorial Auditorium*	

18:30 ~ 22:00	**Banquet and Award Night** *Location: Crowne Plaza Hotel Cabana, Palo Alto*	

TECHNICAL PROGRAM

Thursday, September 15th

Keynotes

Chair: TBA

Location: Memorial Auditorium

TIME		PAGE NO.
08:30 ~ 09:00	**Structural Health Monitoring for Civil Infrastructure - From Instrumentation to Decision Support** Anne S. Kiremidjian [Stanford University, USA]	y
09:00 ~ 09:40	**Does the Maturity of Structural Health Monitoring Technology Match User Readiness?** Dennis Roach [Sandia National Laboratories, USA]	y
09:40 ~ 10:00	**Coffee Break** *Location: Dohrmann Grove*	

Aerospace Structures: Laboratory Demonstration - II

Chair: TBA

Location: HC 200-002

TIME		PAGE NO.
10:00 ~ 10:20	**Piezoelectric Wafer Active Sensor Network for Aircraft Structures Damage Localisation: Pitch-Catch Method** H. Boukabache, M.Matmat, S. Ksouri, C. Escriba, J-Y. Fourniols [French National Centre for Scientific Research & Toulouse University, France]	y
10:20 ~ 10:40	**Detecting the Point of Impact on an Anisotropic Cylindrical Surface using only Four Acoustic Sensors** T. Hajzargarbashi[1], H. Nakatani[2], T. Kundu[1], N. Takeda[2] [1) University of Arizona, USA; 2) University of Tokyo, Japan]	y
10:40 ~ 11:00	**Impact Damage Assessment by Sensor Signal Analysis** R. John[1], I. Read[1], W. MacPherson[2] [1) BAE Systems, UK; 2) Heriot-Watt University, UK]	y
11:00 ~ 11:20	**Beam Shape Sensing using Inverse Finite Element Method: Theory and Experimental Validation** M. Gherlone[1], P. Cerracchio[1], M. Mattone[1], M. D. Sciuva[1], A. Tessler[2] [1) Politecnico di Torino, Italy; 2) NASA Langley Research Center, USA]	y
11:20 ~ 11:40	**Integrated Optical Fibers into Aluminium Extrusions Enabling Structural Health Monitoring of Aerospace Structures** G. Pouget[1], A. Fernandez-Lopez[2], A. Güemes[2], J.C. Ehrström[1] [1) Constellium CRV, France; 2) Polytechnic University of Madrid, Spain]	y
11:40 ~ 12:00	**Early Results of Lamb Waves Approach to Assess Corrosion Damage using Direct Image Path in an Aeronautical Aluminum Alloy** F. Dotta, F. S. da Silva, A. B. da Silva [Embraer S.A., Brazil]	y

SPECIAL SESSION

Intelligent Sensor Networks for SHM - II

Chairs: J. Lynch (Univ. of Michigan, USA), A. Swartz (Michigan Techn. Univ., USA)

Chair: TBA

Location: HC 200-030

TIME		PAGE NO.
10:00 ~ 10:20	**Wirelss Sensor Network for Guided Wave Propagation with Piezoelectric Transducers** C. Dürager[1], A. Heinzelmann[2], D. Riederer[2] [1) Swiss Federal Laboratories of Materials Science and Technology, Switzerland; 2) Interstate University of Applied Sciences of Technology, Switzerland]	y

10:20 ~ 10:40	**Architecture of a Remote Impedance-Based Structural Health Monitoring System used in Aircrafts** L.G.A. Martins[1], R.M. Finzi Neto[2], C.A. Gallo[3], L. V. Palomino[3], P. Moneda[3], D.A. Rade[3], V. Steffen Jr.[3] [1) School of Computations, Federal University of Uberlandia, Brazil; 2) Federal University of Goias, Brazil; 3) School of Mechanical Engineering, Federal University of Uberlandia, Brazil]	y
10:40 ~ 11:00	**Implementation of a Receptance-based SHM Algorithm on Wireless Smart Sensors** S. Jang[1], S. H. Sim[2], B. F. Spencer Jr.[3] [1) University of Connecticut, USA; 2) Ulsan Institute of Science and Technology, South Korea; 3) University of Illinois at Urbana-Champaign, USA]	y
11:00 ~ 11:20	**Distributed Optical Fiber Smart Sensors for Structural Health Monitoring** G. Wild, S. Hinckley [Centre for Communications Engineering Research, Australia]	y
11:20 ~ 11:40	**Deformation Monitoring of Shield Tunnel Based on Distributed Optical Fiber Strain Sensing Technology** S. Song, Z. Wu, C. Yang, C. Wan, S. Shen [International Institute for Urban System Engineering, Southeast University, China]	y
11:40 ~ 12:00	**Efficient Guided Wave SHM Baseline Capture and Selection** A. J. Croxford, O. Putikis, P. D. Wilcox [University of Bristol, UK]	y

SPECIAL SESSION

Hot Spot Monitoring - I

Chairs: H. Sohn (KAIST, Korea), J.B. Ihn (Boeing, USA), M. Leonard (AFRL, USA)

Chair: TBA

Location: HC 200-034

TIME		*PAGE NO.*
10:00 ~ 10:20	**Development and Performance Quantification of an Ultrasonic Structural Health Monitoring System for Monitoring Fatigue Cracks on a Complex Aircraft Structure** J.-B. Ihn[1], L. Pado[2], M. S. Leonard[3], M. P. DeSimio[4], S. E. Olson[4] [1) Boeing Research & Technology, USA; 2) Information Technology, USA; 3) Air Force Research Laboratory, Wright-Patterson AFB, USA; 4) University of Dayton Research Institute, USA]	y
10:20 ~ 10:40	**Hot-Spot Fatigue and Impact Damage Detection on a Helicopter Tailboom** P. Xing[1], H. Wilson[2], A. G. Baines[2], N. Bordick[3], S. Banerjee[1], H. Chung[1], S. Beard[1], M. Pappakostas[1] [1) Acellent Technologies, Inc., USA; 2) Bell Helicopters Textron Inc., USA; 3) Aviation Applied Technology Directorate, USA]	y
10:40 ~ 11:00	**Damage Identification in Structural Components using Vibration and Wave Propagation Data** S. Banerjee[1], F Ricci[2], E. Monaco[2], A. Mal[3] [1) Indian Institute of Technology Bombay, India; 2) University of Naples, Italy; 3) University of California Los Angeles, USA]	y
11:00 ~ 11:20	**Damage Detection Techniques in Composite Structures Using Ultrasonic Guided Waves** F. Ricci[1], E. Monaco[1], L. Lecce[1], S. Banerjee[2], A. K. Mal[3] [1) University of Naples Federico II, Italy; 2) Indian Institue of Technology Bombay, India; 3) University of California Los Angeles, USA]	y
11:20 ~ 11:40	**Reference-free Structural Health Monitoring for Detecting Delamination in Composite Plates** C. M. Yeum[1], H. Sohn[1], J.-B. Ihn[2], H. J. Lim[1] [1) Korea Advanced Institute of Science and Technology, Korea; 2) Boeing Research & Technology, USA]	y
11:40 ~ 12:00	**Ultrasonic Guided Wave SHM for Probabilistic Fatigue Crack Growth Prognostics** C. J. Lissenden, W. L. McGill, S. Li [Pennsylvania State University, USA]	y

SPECIAL SESSION

Wave Propagation Simulation - I

Chairs: W. Staszewski (Sheffield University, UK), W. Ostachowicz (PAS, Poland)

Chair: TBA

Location: HC 200-203

TIME		*PAGE NO.*
10:00 ~ 10:20	**A Wavelet-Based Spectral Finite Element Method for Simulating Elastic Wave Propagation** L. Pahlavan, C. Kassapoglou, Z. Gürdal [Delft University of Technology, The Netherlands]	y
10:20 ~ 10:40	**A Method to Detect Structural Damage Using High-Frequency Seismograms** V.M. Heckman, M.D. Kohler, T.H. Heaton [Department of Mechanical and Civil Engineering, California Institute of Technology]	y
10:40 ~ 11:00	**Development of SEM-based PESEA Code for Modeling PZT Induced Acousto-ultrasonic Waves Propagating in Metallic & Composite Structures** K. Lonkar, F.-K. Chang [Stanford University, USA]	y

11:00 ~ 11:20	**Nonlinear Guided Waves: Theoretical Considerations and Applications to Thermal Stress Measurement in Continuous Welded Rails** C. Nucera, F. L. di Scalea [University of California San Diego, USA]	y
11:20 ~ 11:40	**Local Interaction Simulation of Guided-wave Propagation in Composite Plates using CLoVER Transducer** K. S. Nadella, C. E. S. Cesnik [University of Michigan, USA]	y
11:40 ~ 12:00	**Predictive Modeling of Ultrasonics SHM with PWAS Transducers** M. Gresil, Y. Shen, V. Giurgiutiu [University of South Carolina, USA]	y

Advanced Diagnostics for Damage Assessment - IV

Chair: TBA

Location: HC 200-205

TIME		*PAGE NO.*
10:00 ~ 10:20	**A Novel Damage Sensitive Feature Based on State-Space Representation** A. Clement[1], S. Laurens[1], S. Girard[2] [1) Université de Toulouse, France; 2) LJK & INRIA Rhône-Alpes, France]	y
10:20 ~ 10:40	**Damage Classification in Composite Laminates; Matrix Micro-Cracking and Delamination** C. Larrosa, K. Lonkar, S. Shankar, F.-K. Chang [Stanford University, USA]	y
10:40 ~ 11:00	**Identifying Scatter Targets in 2D Space using In Situ Phased-Arrays for Guided Wave Structural Health Monitoring** E. B. Flynn[1], M. D. Todd[2], S. S. Kessler[1], C. T. Dunn[1] [1) Metis Design Corporation, USA; 2) University of California San Diego, USA]	y
11:00 ~ 11:20	**Reference-Free Damage Identification using Statistical Modeling** A. Medda[1], V. DeBrunner[2] [1) US Army Aeromedical Research Laboratory, USA; 2) Florida State University, USA]	y
11:20 ~ 11:40	**Infrared Thermography and Piezoelectric Patches for Impact Damage Detection in Composite Structures** G. M. Carlomagno, C. Meola, F. Ricci [University of Naples Federico II, Italy]	y
11:40 ~ 12:00	**An Integrated Structural Intensity based Damage Detection Approach for Nonlinear behaving Damage** F. Semperlotti[1], S. C. Conlon[2], E. C. Smith[2] [1) University of Michigan, USA; 2) The Pennsylvania State University, USA]	y

SPECIAL SESSION

Decision Making in Structural Health Monitoring - I

Chairs: D. Zonta (Univ. of Trento, Italy), M. Todd (UC San Diego, USA)

Chair: TBA

Location: HC 200-303

TIME		*PAGE NO.*
10:00 ~ 10:20	**Computation of Lifetime Value of Information for Monitoring Systems** M. Pozzi, A. D. Kiureghian [University of California, Berkeley, USA]	y
10:20 ~ 10:40	**Carbon Nanotube (CNT) Enhancements for Aerosurface State Awareness** S. S. Kessler[1], C. T. Dunn[1], S. S. Wicks[2], R. G. de Villoria[2], B. L. Wardle[2] [1) Metis Design Corporation, USA; 2) Massachusets Institute of Technology, USA]	y
10:40 ~ 11:00	**Optimal Sensor Placement and Weighted Residual Method in Loads Estimation Supporting Structural Health Monitoring** C. Haynes, M. Todd, K. Napolitano, H. Matt [University of California San Diego, USA]	y
11:00 ~ 11:20	**Uncertainty Quantification in Transmissibility-Derived Features Used for Fault Detection** Z. Mao, M. D. Todd [University of California San Diego, USA]	y
11:20 ~ 11:40	**Comparing Measured Response Uncertainty for a Composite Steel Girder Bridge to Damage Obtained in Finite Element Analysis** S. Plude[1], R. Christenson[1], J. DeWolf[1], A. Jamalipour[2] [1) University of Connecticut, USA; 2) Connecticut Department of Transportation, USA]	y
11:40 ~ 12:00	**Hybrid Coherent/Incoherent Beam Forming Diagnostic Approach to Naval Assets** S. S. Kessler[1], E. B. Flynn[1], M. D. Todd[2] [1) Metis Design Corporation, USA; 2) University of California San Diego, USA]	y

Novel Signal Processing Techniques - III

Chair: TBA

Location: HC 200-305

TIME		*PAGE NO.*
10:00 ~ 10:20	**Structural Health Monitoring of an Advanced Composite Aircraft Structure using a Modal Approach** T. H. Ooijevaar, R. Loendersloot, L.L. Warnet, R. Akkerman, A. de Boer [University of Twente, The Netherlands]	y
10:20 ~ 10:40	**On the Application of Bayesian Analysis and Advanced Signal Processing Techniques for the Impact Monitoring of Smart Structures** M.A. Torres-Arredondo, C. Yang, C.-P. Fritzen [University of Siegen, Germany]	y
10:40 ~ 11:00	**Comparison of Damage Localization based on Modal Filters using Strain Measurements and Acceleration Measurements** A. Deraemaeker, G. Tondreau [Université Libre de Bruxelles, Belgium]	y
11:00 ~ 11:20	**Multi-source Acoustic Emission Signals Analysis Based on Blind Source Separation using Macro Fiber Composite** H. Nasser[1], W. Zhou[2] [1) Centre de Recherche Public Henri Tudor, Luxembourg; 2) Harbin Institute of Technology, China]	y
11:20 ~ 11:40	**Finite Element Model Based State Estimation in Mechanical and Structural Systems** E. M. Hernandez [University of Vermont, USA]	y
11:40 ~ 12:00	**Hybrid Immune Algorithm for Structural Health Monitoring Using Acceleration Data** R. Li, A. Mita [Keio University, Japan]	y

SPECIAL SESSION

SHM Benchmark for High-rise Structures - I

Chair: Y.Q. Ni (HKPU, Hong Kong)

Chair: TBA

Location: ART 2

TIME		*PAGE NO.*
10:00 ~ 10:20	**An Integrated MATLAB Toolbox for Optimal Sensor Placement Based on Multiple Optimization Strategies** T. H. Yi, H. N. Li, M. Gu [Dalian University of Technology, China]	y
10:20 ~ 10:40	**Experimental Verification of Substructure Damage Detection Method using ARX and ARMAX** L. Mei, A. Mita, Z. Xing [Keio University, Yokohama, Japan]	y
10:40 ~ 11:00	**Application of Distributed Optical Fiber Strain Measurement into Geotechnical Engineering Monitoring** B. Shi, D. Zhang, H. H. Zhu, C. Liu [Nanjing University, China]	y
11:00 ~ 11:20	**Structural Safety Monitoring During Construction of Shanghai Expo Puxi Entertainment Hall** Z. Ming[1], L. Jun[2] [1) Tongji University, P.R.China; 2) Shanghai Geotechnical Investigations & Design Institute Co., Ltd, China]	y
11:20 ~ 11:40	**New Software for Real-Time Modal Identification** Y. Kaya, E. Safak [Bogzaici University, Turkey]	y
11:40 ~ 12:00	**Proactive Condition Assessment in Civil Engineering Using Automated Multi-Sensor Systems** M. Stoppel[1], J. H. Kurz[2], A. Taffe[1], C. Boller[2] [1) Federal Institute for Materials Research and Testing, Germany, 2) Fraunhofer Institute for Nondestructive Testing, Germany]	y

SPECIAL SESSION

Non-contact Sensing Technologies - I

Chair: H. Sohn (KAIST, Korea)

Chair: TBA

Location: ART 4

TIME		*PAGE NO.*
10:00 ~ 10:20	**Detection and Sizing of Subsurface Impedance Discontinuities using Acoustic Wavefield Images** T. E. Michaels, J. E. Michaels, M. Ruzzene [Georgia Institute of Technology, USA]	y

10:20 ~ 10:40	**Terahertz Phonon Amplification and Sasing in Semiconductor Superlattice Structures** R. P. Beardsley, A. J. Kent [University of Nottingham, UK]	y
10:40 ~ 11:00	**Lamb Wave Interaction with a T-Joint** C. Allen, C. T. Owens, E. D. Swenson [Air Force Institute of Technology, USA]	y
11:00 ~ 11:20	**The Search for Optimal Sensor Network in Lamb Wave-based SHM Method** P. Malinowski, T. Wandowski, W. Ostachowicz [Polish Academy of Sciences, Poland]	y
11:20 ~ 11:40	**Experimental Studies of Structure Inspection and Damage Detection Based on Elastic Waves Energy Distribution** M. Radzienski, W. Ostachowicz [Polish Academy of Sciences, Poland]	y
11:40 ~ 12:00	**Robust Vision-Based Approaches for Structural Health Monitoring** M. R. Jahanshahi, S. F. Masri [University of Southern California, USA]	y

12:00 ~ 13:20	**Lunch at the Oval** *Location: The Oval*	

Faculty / Student Panel

TIME		PAGE NO.
12:00 ~ 13:20	**Chair: Charles Farrar**, Los Alamos National Laboratory, USA Panelists: TBA *Location: TBA*	

Aerospace Structures: Laboratory Demonstration - III

Chair: TBA

Location: HC 200-002

TIME		PAGE NO.
13:20 ~ 13:40	**Contact Pressure and Ultrasonic Damage Feature(s) in Health Monitoring of L-shaped Bolted Joints in Aerospace Structures** M. Jalalpour[1], A. El-Osery[2], E. Austin[3], M. R. Taha[1] [1) University of New Mexico, USA; 2) New Mexico Tech., Socorro, USA; 3) Moog CSA Engineering, USA]	y
13:40 ~ 14:00	**Application of Unscented Kalman Filters, Wavelet Packet Transforms and Feedback Control to Monitoring and Compensate Damaged Aircraft Structures** R. Vepa [University of London, UK]	y
14:00 ~ 14:20	**Bond Graph Model of a Thin SHM Piezoelectric Energy Harvester** T. Sainthuile[1], C. Delebarre[1], S. Grondell[1], C. Paget[2] [1) University of Valenciennes and Hainaut-Cambresis, France; 2) Airbus, UK]	y
14:20 ~ 14:40	**Impact Location Based on Multi-agent Coordination and Fusion for Large Structures** D. Liang, S.-F. Yuan [Nanjing University of Aeronautics and Astronautics, China]	y
14:40 ~ 15:00	**An Integrated Monitoring System for Damage Detection by Carbon Fibers and Optical Fibers** H. Huang[1], Z. S. Wu[1], C. Q. Yang[2] [1) Ibaraki University, Japan; 2) Southeast University, China]	y
15:00 ~ 15:20	**Advanced Approach for Multi-Site Damage Monitoring on Aircraft Fuselage Panel using Sparse PZT Actuator/Sensor Arrays** R. Hedl[1], J. Finda[1], G. Parthasarathy[2] [1) Honeywell International, Czech Republic; 2) Honeywell International, USA]	y

SPECIAL SESSION

Intelligent Sensor Networks for SHM - III

Chairs: J. Lynch (Univ. of Michigan, USA), A. Swartz (Michigan Techn. Univ., USA)

Chair: TBA

Location: HC 200-030

TIME		PAGE NO.
13:20 ~ 13:40	**Use of Carbon Nanotubes for Strain Sensing of Epoxy Based Composites** J. Rams, M. Sánchez, M. Campo, A. Jimenez, A. Ureña [Rey Juan Carlos University, Spain]	y
13:40 ~ 14:00	**Wireless Links for Global Positioning System Receivers** F. Casciati, L. Wu [University of Pavia, Italy]	y

14:00 ~ 14:20	**Automatic Wireless Transfer of Acquired Usage Monitoring Data** N. Cranley, S. Wilmot [ACRA CONTROL, Ireland]	y
14:20 ~ 14:40	**Sandwich Node Architecture for Task Preemption in Wireless Sensor Networks for Structural Health Monitoring Applications** Z. Wang, S. N. Pakzad, L. Cheng [Lehigh University, USA]	y
14:40 ~ 15:00	**Smart Battery-Free Wireless Sensor Networks for Structural Health Monitoring** A. Abedi, A. Razi, F. Afghah [Univeristy of Maine, USA]	y
15:00 ~ 15:20	**Military-Standard Sensor Nodes for the SmartBrick Structural Health Monitoring Platform** A. Gunasekaran, P. N. Chulick, S. Sedigh, A. R. Hurson [Department of Electrical and Computer Engineering, Missouri University of Science and Technology, USA]	y

SPECIAL SESSION

Hot Spot Monitoring - II

Chairs: H. Sohn (KAIST, Korea), J.B. Ihn (Boeing, USA), M. Leonard (AFRL, USA)

Chair: TBA

Location: HC 200-034

TIME		*PAGE NO.*
13:20 ~ 13:40	**Guided Wave Based SHM Approach using SAFT-Algorithm for Impact Detection in Composite Materials** L. Schubert[1], R. Schwerz[1], M. Leibowitz[2], U. Lieske[1], B. Frankenstein[1] [1) Fraunhofer Institute for Non-Destructive Testing, Dresden, Germany; 2) RAFAEL, Israel]	y
13:40 ~ 14:00	**Baseline-free Crack Detection in Nuclear Power Plants** H. Lee, H. Sohn [Korea Advanced Institute of Science and Technology, Korea]	y
14:00 ~ 14:20	**Strain Monitoring and Damage Detection of Single-Lap Joint with Embedded FBGs** H. Murayama[1], D. Wada[1], K. Kageyama[1], K. Uzawa[1], H. Igawa[2] [1) School of Engineering, The University of Tokyo, Japan; 2) Japan Aerospace Exploration Agency, Japan]	y
14:20 ~ 14:40	**Health Monitoring of Composite Structures Using Carbon Nanotube and Acoustic Sensors** G. J. Gallo[1], L. Gao[1], E. T. Thostenson[1], T.-W. Chou[1], S. Das[2], C. Cheung[2], B. Shen[2], S. Banerjee[2] [1) University of Delaware, USA; 2) Acellent Technologies Inc. USA]	y
14:40 ~ 15:00	**Acousto-Ultrasonic In Situ Monitoring of Fatigue Cracking in an Aircraft Wing Skin Specimen** S. Galea, C. Rosalie, N. Rajic [Defence Science and Technology Organisation, Australia]	y
15:00 ~ 15:20	**Crack Detection using Combinations of Acoustic Emission and Guided Wave Signals from Bonded Piezoelectric Transducers** M. M. Derriso[1], J. E. Little II[1], K. A. Vehorn[1], M. J. Davies[2], M. P. DeSimio[2] [1) AFRL/RBSA, USA; 2) University of Dayton Research Institute, USA]	y

SPECIAL SESSION

Wave Propagation Simulation - II

Chairs: W. Staszewski (Sheffield University, UK), W. Ostachowicz (PAS, Poland)

Chair: TBA

Location: HC 200-203

TIME		*PAGE NO.*
13:20 ~ 13:40	**Lamb Wave Techniques for Damage Detection in CFRP-Components - Is This Really Possible?** W. Hillger, A. Szewieczek, D. Schmidt, M. Sinapius [German Aerospace Center (DLR), Germany]	y
13:40 ~ 14:00	**System Identification with Generalized Impulse and Frequency Response Function** R. R. Zhang, L. Gargab [Colorado School of Mines, USA]	y
14:00 ~ 14:20	**Propagation of Guided Elastic Waves in Aircraft Structural Elements by the Spectral Finite Element Method** A. Zak, W. Ostachowicz [Polish Academy of Sciences, Poland]	y
14:20 ~ 14:40	**SHM of Structural Materials by Means of Highly Nonlinear Solitary Waves** X.Ni, P. Rizzo [University of Pittsburgh, PA, USA]	y
14:40 ~ 15:00	**Interaction of Elastic Waves with Delaminations in CFRP Structures: A Numerical Study using the Spectral Element Method** H. Jung, R. T. Schulte, C.-P. Fritzen [University of Siegen, Germany]	y
15:00 ~ 15:20	**Combining Guided Waves and Electromechanical Impedance Method for SHM Applications** X. Zhu, P. Rizzo [University of Pittsburgh, USA]	y

Advanced Diagnostics for Damage Assessment - V

Chair: TBA

Location: HC 200-205

TIME		*PAGE NO.*
13:20 ~ 13:40	**Experimentation and Detection Characters of Lamb Wave Phase Array on a Large Thin aluminium Plate** D. Y. Gao, Z. J. Wu, M. J. Liu, Z. Wang [Dalian University of Technology, China]	y
13:40 ~ 14:00	**Damage Detection of Composite Structure Using Independent Component Analysis** R. Hajrya, N. Mechbal, M. Verge [Process and Engineering in Mechanics and Materials Laboratory (PIMM), France]	y
14:00 ~ 14:20	**Rapid Localization and Ultrasonic Imaging of Multiple Damages in Structural Panel with Piezoelectric Sensor-Actuator Network** G. Kolappan Geetha , V.T. Rathod, N. Chakraborty, D. Roy Mahapatra, S. Gopalakrishnan [Indian Institute of Science, India]	y
14:20 ~ 14:40	**Damage Assessment of CFRP Stiffened Panels by Electro-mechanical Impedance Method** N.J. Ferreira, J.M. Silva, R.J. Guimaraes, P.J. Antunes, M.A. Baptista, J.C. Viana, G.R. Dias [Critical Materials, Lda, Portugal]	y
14:40 ~ 15:00	**Optimal Sensor Fusion for Structural Health Monitoring of Aircraft Composite Components** W. Costiner[1], H. A. Winston[1], M. R. Gurvich[1], A. Ghoshal[2], G. S. Welsh[1], S. L. Butler[1], M. R. Urban[3], N. Bordick[4] [1) United Technologies Research Center, USA; 2) Army Research Laboratory, USA; 3) Sikorsky Aircraft Corporation, USA; 4) Army Aviation Applied Technology Directorate, USA]	y
15:00 ~ 15:20	**Impact Location Identification and Damage Detection on Plate-like Structures using Time-reversal Method** C. Chen[1], Y. Li[2], F-G Yuan[3] [1) Northwestern Polytechnical University, USA; 2) North Carolina State University, USA]	y

SPECIAL SESSION

Decision Making in Structural Health Monitoring - II

Chairs: D. Zonta (Univ. of Trento, Italy), M. Todd (UC San Diego, USA)

Chair: TBA

Location: HC 200-303

TIME		*PAGE NO.*
13:20 ~ 13:40	**Streicker Bridge: The Impact of Monitoring on Decision Making** D. Zonta[1], B. Glisic[2], S. Adriaenssens[3] [1) University of Trento, Italy; 2) Princeton University, USA]	y
13:40 ~ 14:00	**Advanced Sensing, Degradation Detection, Diagnostic and Prognostic Capabilities for Structural Health Management** R. Clements[1], D. Darr[1], J. Morse[1], B. C. Laskowski[1], R. Betti[2], T. K. Ooi[3], A. Corder[3] [1) Analatom Incorporated, USA; 2) Columbia University, USA; 3) Missile Defense Agency, USA]	y
14:00 ~ 14:20	**Acousto-optic Measurements in CFRP Laminates using Fiber Bragg Grating Sensors** H. Toutanji[1], N. Mabry[1], C. Banks[2] [1) University of Alabama in Huntsville, USA; 2) NASA Marshall Space Flight Center, USA]	y
14:20 ~ 14:40	**Uncertainties in Damage Identification and Lifetime Functions of Ageing Concrete Structures** A. Del Grosso[1], F. Lanata[2] [1) University of Genoa, Italy; 2) University of Nantes, France]	y
14:40 ~ 15:00	**A Multi-Non-Linear Civil SHM Model for Decision Support** H. Allmer, H. Wenzel, H. Allmer [Vienna Consulting Engineers, Austria]	y
15:00 ~ 15:20	**Research on Software Platform of Bridge Health Monitoring System Based on Java EE & Scientific Computing Engine** D.-H. Dan[1], Y. Zhao[1], X. Yan[2] [1) Tongji University, P.R.China; 2) Shanghai Urban Construction Design and Research Institute, China]	y

Modeling / Simulation

Chair: TBA

Location: HC 200-305

TIME		*PAGE NO.*
13:20 ~ 13:40	**Verification of Unified Framework for Plate Structures Using Kirchhoff's Plate Theory** A. Dixit, S. Hanagud [Georgia Institute of Technology, USA]	y
13:40 ~ 14:00	**Finite Element Simulation of Compensation for Temperature Influence on Lamb Wave Propagation** W. Z. Qu[1], D. J. Inman[2] [1) Wuhan University, China; 2) Virginia Tech., USA]	y

14:00 ~ 14:20	**Experimental Validation of Algorithms for Wave Propagation Modeling in 2D and 3D Structures based on the Spectral Element Method** W. Ostachowicz[1,2], P. Kudela[1], M. Radzieński[1] [1) Polish Academy of Sciences, Poland; 2) Gdynia Maritime University, Poland]	y
14:20 ~ 14:40	**Damage Assessment Using Hyperchaotic Excitation and Nonlinear Prediction Error** S. Torkamani[1], E. A. Butcher[1], M. D. Todd[2], G. Park[3] [1) New Mexico State University, USA; 2) University of California San Diego, USA; 3) Los Alamos National Laboratory, USA]	y
14:40 ~ 15:00	**Wave Propagation in Anisotropic Layered 2D Structures Using Spectral Finite Elements** B. Hennings, R. Lammering [Helmut Schmidt University, Germany]	y
15:00 ~ 15:20	**1-D and 2-D Modeling of Power and Energy Transduction of Piezoelectric Wafer Active Sensors for Structural Health Monitoring** B. Lin, V. Giurgiutiu [University of South Carolina, USA]	y

SPECIAL SESSION

SHM Benchmark for High-rise Structures - II

Chair: Y.Q. Ni (HKPU, Hong Kong)

Chair:	***Location:***
TBA	ART 2

TIME		*PAGE NO.*
13:20 ~ 13:40	**Finite Element Model Updating of Guangzhou Television and Sightseeing Tower using Regularization Technique** T.T. Chung[1], S. Cho[2], C.-B. Yun[1], H. Sohn[1], H. Myung[1] [1) Korea Advanced Institute of Science and Technology, Korea; 2) University of Illinois at Urbana-Champaign, USA]	y
13:40 ~ 14:00	**Operational Modal Analysis for a Benchmark High-rise Structure** Y. Niu, P. Kraemer, C.-P. Fritzen [University of Siegen, Germany]	y
14:00 ~ 14:20	**An Efficient Sensor Placement Method for High-rise Structures - A Case Study: The Canton Tower, China** T. H. Yi, H. N. Li, M. Gu [Dalian University of Technology, China]	y
14:20 ~ 14:40	**Information Entropy-based Algorithm of Sensor Placement Optimization for Structural Damage Detection** S.-Q. Ye, Y.-Q. Ni [The Hong Kong Polytechnic University, Hong Kong]	y
14:40 ~ 15:00	**SSA-Based Stochastic Subspace Identification of Structures from Output-only Vibration Measurements** C.-H. Loh[1], Y.-C. Liu[1], Y.-Q. Ni[2] [1) National Taiwan University, Taiwan; 2) The Hong Kong Polytechnic University, Hong Kong]	y
15:00 ~ 15:20	**SHM Benchmark for High-rise Structures: Description of Host Structure and Measurement Data** Y.-Q. Ni, Y. Xia, W. Lin, J.-M. Ko [The Hong Kong Polytechnic University, Hong Kong]	y

SPECIAL SESSION

Non-contact Sensing Technologies - II

Chair: H. Sohn (KAIST, Korea)

Chair:	***Location:***
TBA	ART 4

TIME		*PAGE NO.*
13:20 ~ 13:40	**Visualization of Lamb Wave Interaction with a 5 mm Fatigue Crack using 1D Ultra High Frequency Laser Doppler Vibrometry** C. T. Owens, E. D. Swenson, C. Allen [United States Air Force Institute of Technology, USA]	y
13:40 ~ 14:00	**Developing a Wireless Two-dimensional Image-based Crack Sensor for Concrete Structures** S. H. Man, C. Z. Ng, H. Muhammad, C-C Chang, A. Bermak [Hong Kong University of Science and Technology, Hong Kong]	y
14:00 ~ 14:20	**Interaction of Lamb Waves with Fatigue Cracks in Aluminum Plates** E. D. Swenson, C. T. Owens, C. Allen [Air Force Institute of Technology, USA]]	y
14:20 ~ 14:40	**Localization of Crack Initiation in a Pipe Structure Using a Laser Based Acoustic Emission Technique** B. Park, H. Sohn [Department of Civil and Environmental Engineering, KAIST, Korea]	y

14:40 ~ 15:00	**Applications of the Vision-based Monitoring System Using a Digital Image Correlation Technique to Long-span Bridge Cables** S.-W. Kim, N.-S. Kim [Pusan National University, Korea]	y
15:00 ~ 15:20	**Damage Detection Using Andrew Plots** F. Gharibnezhad, L. E. Muijca, J. Rodellar [Technical University of Catalonia, Spain]	y
15:20 ~ 15:35	**Coffee Break** *Location: Dohrmann Grove*	

Panel Discussion

TIME		*PAGE NO.*
15:35 ~ 17:00	**Chair: TBA** Panelists: TBA *Location: TBA*	