



## Center of Excellence in Structural Health Monitoring Fall Meeting

Dates: 3-4 November 2008  
 Place: Nittany Lion Inn, University Park, PA  
 Registration: online later this week  
 Hotel Reservations: 800-233-7505  
 Block BENK08A until Oct 17, \$120/night  
 Preliminary Schedule Highlights:



**Monday, 3 Nov 08** (breaks, lunch, and dinner provided)

9:30 Registration  
 10:00 Welcome  
 10:30 Keynote, John B. Johns, Office of the Secretary of Defense  
 13:20 Shuang Jin, Federal Highway Administration  
 14:25 Robert Sargent, Booz Alan Hamilton  
 16:00 Lab tour of Vertical Lift Research Center  
 18:00 Reception  
 18:30 Dinner

**Tuesday, 4 Nov 08** (breaks and lunch provided)

8:00 Registration  
 8:30 Welcome  
 9:00 Keynote, Eric Lindgren, Air Force Research Laboratory  
 11:35 Douglas Adams, Purdue University  
 13:00 Christopher Wassel, RFID CoE, Penn State Behrend  
 15:00 Advisory Board Meeting

Presentations will be given by Penn State researchers and Center members as well as...

*John B. Johns, Office of the Secretary of Defense, Washington DC*

### **System Maintenance – What it is and why we don't think about it until it is too late**

Mr. Johns is Assistant Deputy Undersecretary of Defense for Maintenance. In this position, he is responsible for oversight of the Department's annual \$80 billion maintenance program.

In past assignments, Mr. Johns served the Army as Chief, Research Support Division, and Deputy Director, Aeroflightdynamics Directorate, NASA Ames Research Center, Deputy Director, and the Army's lead, of the National Rotorcraft Technology Center, and Associate Director for Systems, Aviation Research, Development, and Engineering Center, Army Aviation and Missile Command. From July 2000 through October 2002, Mr. Johns served as Principal Assistant Deputy for Systems Acquisition, U.S. Army Aviation and Missile Command where he was responsible for lifecycle management of over 20 Army aviation, missile, and ground systems with an annual budget of approximately \$1B. In October 2002, Mr. Johns was assigned as Deputy Commander for Systems Support, U.S. Army Aviation and Missile Command where he managed overhaul and maintenance, or RESET, of all aviation and missile systems redeployed from Iraq and Afghanistan. From August 2003 to July 2005, Mr. John's served as Special Assistant to the Commanding General, U.S. Army Materiel Command.

In August 2005, he joined the Navy as a member of the Senior Executive Service as the Director of Industrial Operations, Naval Air Systems Command, and Deputy Commander of Fleet Readiness Centers (FRC), Naval Air Forces. In this position, he was responsible for naval aviation maintenance operations across six FRC commands, with a workforce of over 14,000 personnel and an operating budget of approximately \$4B, and oversaw annual maintenance and repair of over 600 aircraft, 7500 engines and modules, and 500,000 components and support equipment.

Mr. Johns holds a Bachelor of Science in Aerospace Engineering from Penn State and a Master's in Aeronautics and Astronautics from Purdue. He is also a graduate of the National Security Management Program, National Defense University.

*Eric A. Lindgren, Air Force Research Laboratory*

### **Challenges for Implementation of Structural Health Monitoring: Sensing and Validation**

Dr. Lindgren is currently the Branch Technical Advisor for the Nondestructive Evaluation Branch in the Materials and Manufacturing Directorate of the Air Force Research Laboratory where he is responsible for the technical content and technical quality of the work being performed in the Branch. Before joining AFRL in 2006, Eric worked as the Director of NDE Sciences at SAIC Ultra Image, where he led efforts to develop and deploy advanced inspection methods for aerospace applications. Additional experience includes 8 years at a small business developing materials characterization and process monitoring/control methods using NDE technology. He has over 20 years experience in NDE research, development, transition, and deployment. He holds a Ph.D. in Materials Science and Engineering from Johns Hopkins University.

*Douglas E. Adams, Purdue University*

### **Barriers and Solutions for the Application of Structural Health Monitoring Technology**

Dr. Adams is an Associate Professor of Mechanical Engineering, University Faculty Scholar, and Director of the Center for Systems Integrity at Purdue University. He conducts research in nonlinear dynamics with application to structural health monitoring and prognosis. He has graduated 19 MS and PhD students who have published 150 papers with Dr. Adams. He has also published a textbook on structural health monitoring and has commercialized many of his research findings including a composite missile health monitoring system, laser vibrometry inspection system for composite structures, wheel inspection tool for the U.S. Army TACOM, rolling tire crack detection method, and damage predictive modeling software for the automotive industry. He has received 13 awards for research and teaching including a Presidential Early Career Award, the Structural Health Monitoring Person of the Year Award, and a Technical Medal of Achievement from the U.S. Army Stryker Combat Brigade. He has also delivered over 20 short courses and 50 seminars and keynote addresses worldwide. Dr. Adams has directed 46 grants/contracts at Purdue.

*Shuang Jin and Frank Jalinoos, Federal Highway Administration*

### **Nonlinear Dynamics Simulation and Chaos Theory Analysis for Structural Health Monitoring of Highway Infrastructures**

Dr. Jin has his B.S. in Mechanical Engineering and M.S. in Shock, Vibration & Acoustics from Shanghai Jiao Tong University (SJTU, Shanghai, China). He obtained his Ph.D. degree in Structures & Dynamics from the George Washington University in 1995. His work has been in the field of advanced nonlinear dynamics analysis of complex mechanical/civil structural systems and smart systems for structural health monitoring. Dr. Jin is a Senior Research Engineer in Engineering & Software Consultants (ESC) at FHWA NDE Center. His previous research experience included years of special research works as a Senior Research Engineer in Wiss, Janney, Elstner (WJE) and as a Resident Research Associate in National Research Council (NRC) both at the Turner-Fairbank Highway Research Center/FHWA, as a Research Scientist in two university research centers, and as a Research Engineer in Division of Applied Mechanics & CAD/CAM Research, China State Shipbuilding Corporation (AMCR/CSSC). His most recent research at FHWA NDE Center included advanced nonlinear dynamics simulations, chaos theory analysis for SHM of highway infrastructures and new NDE technologies for detecting damage in highway structures.

*Robert Sargent, Booz Alan Hamilton*

### **Health Monitoring and Management Benchmarking Study**

*Christopher Wassel, RFID Program Manager, RFID Center of Excellence, Penn State Behrend*  
**RFID Technology and Applications**

[www.esm.psu.edu/shm](http://www.esm.psu.edu/shm)



Monday, November 3, 2008

9:30	Registration
10:00	<b>Welcome</b> , <i>Anthony Atchley</i> , Associate Dean, College of Engineering <i>Cliff Lissenden</i> and <i>Ed Smith</i> , Ben Franklin Center of Excellence in Structural Health Monitoring
10:30	<b>Keynote: System Maintenance - What it is and why we don't think about it until it is too late</b> , <i>John B. Johns</i> , Office of the Secretary of Defense
11:15	<b>Incorporation of Structural Health Monitoring into the Helicopter Design Process</b> , <i>James Cycon</i> , Sikorsky Aircraft
11:40	<b>Recent Advances in Rotor System Structural Health Monitoring</b> , <i>Edward Smith</i> , Penn State, Aerospace
12:05	Lunch
1:20	<b>Nonlinear Dynamics Simulation and Chaos Theory Analysis for Structural Health Monitoring of Highway Infrastructures</b> , <i>Shuang Jin and Frank Jalinoos</i> , Federal Highway Administration, Turner Fairbank Highway Research Center
1:50	<b>Performance Evaluation and Monitoring of Reflective Pavement Markings</b> , <i>Ghassan Chehab and Eric Donnell</i> , Penn State, Civil and Environmental Engineering
2:15	<b>Automation and SHM</b> , <i>Sean Brennan</i> , Penn State, Mechanical and Nuclear Engineering
2:40	<b>Health Monitoring and Management Benchmarking Study</b> , <i>Robert Sargent</i> , Booz Alan Hamilton
3:05	Break
3:30	<b>CoE SHM Update</b> , <i>Cliff Lissenden and Edward Smith</i> , Ben Franklin Center of Excellence in Structural Health Monitoring
4:00	<b>Lab Tour - Vertical Lift Research Center</b>
6:00	<b>Reception</b>
6:30	<b>Dinner</b>

Tuesday, November 4, 2008

8:00	Registration
8:30	<b>Welcome</b>
9:00	<b>Keynote: Challenges for Implementation of Structural Health Monitoring: Sensing and Validation</b> , <i>Eric Lindgren</i> , Air Force Research Laboratory
9:40	<b>Impact Technologies - Prognostic Sensor Programs to enable SHM</b> , <i>Carl Palmer</i> , Impact Technologies
10:05	<b>New Sensors for Improved Ultrasonic Guided Wave Tomography in SHM</b> , <i>Joseph Rose</i> , Penn State, Engineering Science and Mechanics
10:30	Break
10:50	<b>SHM Discussion Period</b>
11:05	<b>Toward SHM of underground concrete water main pipe-lines</b> , <i>Bernhard Tittmann</i> , Penn State, Engineering Science and Mechanics
11:30	<b>Barriers and Solutions for the Application of Structural Health Monitoring Technology</b> , <i>Douglas Adams</i> , Purdue University
12:00	Lunch
1:00	<b>RFID Technology and Applications</b> , <i>Christopher Wassel</i> , Penn State Behrend, RFID Center of Excellence
1:30	<b>Ultrasonic Guided Wave Phased Array for Plate-Like Structures</b> , <i>Fei Yan</i> , Penn State, Engineering Science and Mechanics
1:55	<b>Sensor Development for Structural Health Monitoring at Intelligent Automation</b> , <i>Dan Xiang</i> , Intelligent Automation, Inc.
2:20	<b>Helicopter Rotor Assembly Load Monitoring</b> , <i>Jacob Loverich</i> , KCF Technologies
2:45	Break
3:00	<b>Advisory Board Meeting</b>