

# JOHNS HOPKINS

## ENGINEERING



The Department of Civil Engineering  
at Johns Hopkins University announces  
The 2007 Richard J. Carroll Lecture

### **Performance-Based Earthquake Engineering:**

Enabling Transparent Risk Assessment and  
Innovative Building Design

#### **Greg Deierlein, Ph.D.**

Professor of Civil and Environmental Engineering  
Director of the John A. Blume Earthquake Eng. Center  
Stanford University

#### **Wednesday, April 11, 2007**

6:00 p.m. Cocktails\*

7:00 p.m. Dinner\*

8:00 p.m. Lecture

The Engineers Club  
11 West Mount Vernon Place  
Baltimore, MD

**Abstract:** Tremendous advancements have been made in earthquake engineering over the past century to mitigate earthquake losses and casualties through improved design of buildings and the civil infrastructure. Most recently, the field has advanced through the development of performance-based approaches for seismic design and assessment that are more scientifically based and provide explicit measures of structural performance under the range of anticipated ground motions. This lecture will summarize recent developments in performance-based earthquake engineering and examine a few applications to assess life-safety risks and to promote innovation in structural design. Included will be a study of the seismic collapse safety provided by building codes and related research to guide the design of tall buildings in earthquake-prone regions. Another focus will be on structural design innovations that employ energy dissipating fuses and controlled rocking response to improve building performance and facilitate post-earthquake repairs.

**Dr. Greg Deierlein** is a professor of structural engineering and director of the John A. Blume Earthquake Engineering Center at Stanford University. He also serves as Deputy Director of the Pacific Earthquake Engineering Research (PEER) Center – a multi-university center supported by the National Science Foundation – whose mission is performance-based approaches for design of buildings, bridges, and lifeline systems. Deierlein's research encompasses computational and experimental methods emphasizing nonlinear simulation of structural performance, characterization of structural material and component behavior, performance-based engineering for earthquake and fire hazards, fracture and stability of steel structures, and the design and behavior of steel, reinforced concrete and hybrid structures. He is an active participant in national technical and professional organizations, has experience as a structural designer with Leslie E. Robertson and Associates in New York, and maintains professional involvement through consulting. His work has been recognized through several national awards including the ASCE Norman Medal (2002, 1994), the ASCE Walter L. Huber Civil Engineering Research Prize (2000), the ASCE State-of-the-Art Award (2000, 1995), the ASCE Raymond Reese Research Prize (2003, 1991), and the AISC Special Recognition Award (2003).

\*Reservations are required for cocktails and dinner. Please call (410) 527-4409 or visit <http://sections.asce.org/maryland/meetings.htm>

<a href="http://www.ce.jhu.edu">http://www.ce.jhu.edu</a>
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