## EERI DISTINGUISHED LECTURE OF 2016

## From Performance-Based Engineering to Earthquake Resilience

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Greg Deierlein is the John A. Blume Professor of Engineering at Stanford University where he directs the Blume Earthquake Eng. Center. Greg previously served as the deputy director forthe Pacific Earthquake Eng. Research (PEER) Center where he managed research for performance-based earthquake

engineering methods and technologies. Greg specializes in design and behavior of structures, nonlinear structural analysis, computational fracture and damage mechanics, and performance-based earthquake engineering. He is aregistered PE and maintains professional activities as a structural engineering consultant and in development of building codes. In 2013, he was elected to the US National Academy of Engineering for his contributions to the use of nonlinear analysis in structural design.

## THE LECTURE

Performance-based earthquake engineering has matured over the past twenty years from a conceptual framework into a formal methodology that can enable quantitative assessment of the seismic risks to buildings and infrastructure. Enabled by advanced nonlinear analysis. performance-based methods provide for more transparent design and decision making that takes advantage of the latest research in characterizing earthquake ground motion hazards, simulating structural behavior, and earthquake assessing damage and its consequences. Performance-based approaches are facilitating the design of innovative structures and influencing building code requirements and public policies for earthquake safety. Yet, many challenges remain to evaluate recovery from earthquake damage and implications on the socio-economic health of society.

