RICHARD SAUSE

In step with the abounding vitality of the time, structural engineer **Fazlur Rahman Khan** (1929-1982) ushered in a renaissance in skyscraper construction during the second half of the 20th century. Fazlur Khan was a pragmatic visionary: the series of progressive ideas that he brought forth for efficient high-rise construction in the 1960s and '70s were validated in his own work, notably his efficient designs for Chicago's 100-story John Hancock Center and 110-story Sears Tower -- the tallest building in the United States since its completion in 1974.

Fazlur Rahman Khan

Lehigh endowed a chair in structural engineering and architecture and has established this lecture series in Khan's honor. It is organized by **Professor Dan M. Frangopol**, the university's first holder of the Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture, and sponsored by the Departments of Civil & Environmental Engineering, and Art, Architecture & Design.

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ATLSS

Fall 2021 Khan Distinguished Lecture Series

The Fazlur Rahman Khan Distinguished Lecture Series honors Dr. Fazlur Rahman Khan's legacy of excellence in structural engineering and architecture

Initiated and Organized by **PROFESSOR DAN M. FRANGOPOL**
The Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture
Department of Civil and Environmental Engineering, ATLSS Engineering Research Center,
Lehigh University
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RICHARD SAUSE

Joseph T. Stuart Professor of Structural Engineering; Director, Advanced Technology for Large Structural Systems (ATLSS) Center; Director, Institute for Cyber Physical Infrastructure & Energy, Lehigh University

"A Research Perspective on Seismic Performance of Steel Building Structures"

Wednesday, November 17, 2021 – 4:30 pm

Location: Whitaker Lab 303, Lehigh University, 5 E. Packer Avenue, Bethlehem, PA

Lecture will also be live streamed, please register for link **(Register here)**

http://www.lehigh.edu/frkseries

Dr. Richard Sause is the Joseph T. Stuart Professor of Structural Engineering and Director of the Advanced Technology for Large Structural Systems (ATLSS) Engineering Research Center at Lehigh University for the past 20 years. He is the founding director of Lehigh's Institute for Cyber Physical Infrastructure and Energy (I-CPIE). He has been a member of the Lehigh Civil and Environmental Engineering faculty since 1989, where he teaches steel structures design, structural dynamics, and earthquake engineering. He is co-author of 130 peer-reviewed journal articles, 230 conference/workshop proceedings papers, and 60 publicly-available technical reports. Dr. Sause's research areas include dynamic response and earthquake performance of steel, concrete and timber structures, and fatigue and in-service performance of highway structures. His research involves theoretical, numerical, and large-scale experimental investigations, along with practical applications and design guidelines. Dr. Sause has collaborated on projects that won the following awards: Charles Pankow Award for Innovation (ASCE, 2016 and 1997); the National Steel Bridge Alliance Merit Award (AISC, 2012); Raymond C. Reese Research Prize (ASCE, 2009); J. James R. Croes Medal (ASCE, 2007); and Charles C. Zollman Award (PCI, 2006).

Steel buildings designed and constructed in the US and other regions with modern seismic standards are anticipated to perform very well with respect to life safety under the expected earthquake demands. For ground motions at the maximum considered earthquake intensity, the probability of collapse is relatively small; however, the probability of structural and nonstructural damage is relatively large for ground motions with shorter return periods comparable to the expected life of these buildings, so questions about seismic resilience remain. Research to improve steel building seismic performance is ongoing with a focus on reducing damage by reducing global lateral drift, avoiding localization of drift, and reducing accelerations. Recent research results include innovative structural mechanisms, such as self-centering, to permit lateral drift without structural damage, as well as various damping systems to reduce drift. Current research seeks to control distributions of internal forces to minimize drift localization and to reduce accelerations. This presentation provides a perspective on current research questions and research outcomes toward improving steel building seismic performance.

FAZLUR RAHMAN KHAN (1929 - 1982) One of the foremost structural engineers of the 20th century, Fazlur Khan epitomized both structural engineering achievement and creative collaborative effort between architect and engineer. Only when architectural design is grounded in structural realities, he believed — thus celebrating architecture's nature as a constructive art, rooted in the earth — can "the resulting aesthetics … have a transcendental value and quality." His ideas for these sky-scraping towers offered more than economic construction and iconic architectural images; they gave people the opportunity to work and live "in the sky." Hancock Center residents thrive on the wide expanse of sky and lake before them, the stunning quiet in the heart of the city, and the intimacy with nature at such heights: the rising sun, the moon and stars, the migrating flocks of birds. Fazlur Khan was always clear about the purpose of architecture. His characteristic statement to an editor in 1971, having just been selected Construction's Man of the Year by *Engineering News-Record*, is commemorated in a plaque in Onterie Center (446 E. Ontario, Chicago): ***"****The technical man must not be lost in his own technology. He must be able to appreciate life; and life is art, drama, music, and most importantly, people."*

SEI ASCE STRUCTURAL ENGINEERING INSTITUTE Lehigh Valley Chapter

1 PDH will be awarded to eligible attendees for each lecture
(minimum webinar participation time of 55 minutes is required)

Please contact the Khan Chair office at 610-758-6123 or Email: infrk@lehigh.edu with any questions.