MCEN GRADUATE SEMINAR

Z. John Zhai
Ph.D. in Fluid Mechanics & Ph.D. in Building Technology
Assistant Professor in Architectural Engineering
Department of Civil, Environmental and Architectural Engineering
University of Colorado at Boulder
http://spot.colorado.edu/~zhiqiang/

ROLES OF CFD IN BUILDING DESIGN

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Abstract:

Computational fluid dynamics (CFD), as the most sophisticated airflow modeling method, can simultaneously predict airflow, heat transfer and contaminant transportation in and around buildings. This seminar introduces the roles of CFD in building design, demonstrating its typical application in designing a thermally-conformable, healthy and energy-efficient building. It will discuss the primary challenges of using CFD in the building modeling and design practice. Furthermore, it analyzes the developing trends in applying CFD to building design, by reviewing the literatures in the proceedings of International Conference on Building Simulation, one of the most influential symposiums in building simulation field.

Biography:

Dr. John Zhai is an assistant professor in Architectural Engineering at Department of Civil, Environmental and Architectural Engineering at University of Colorado at Boulder (UCB). Prof. Zhai has a very unique and integrative background in mechanical and architectural engineering. He received his Dr.Eng. degree in Fluid Mechanics (Department of Engineering Mechanics) from Tsinghua University, China in 1999 and his Ph.D. in Building Technology (Department of Architecture) from Massachusetts Institute of Technology (MIT), USA in 2003. Dr. Zhai has been actively engaged in sustainable building, energy and environment study for many years. His particular research and education interests and expertise include integrated building and system design, building and system performance simulation and evaluation, indoor and outdoor environmental quality study, and sustainable building design. Dr. Zhai teaches several core building courses at UCB such as “Indoor Environment Quality Modeling and Evaluation”, “Building Energy Systems”, and “Sustainable Building Design”.