Center for Risk-Based Community Resilience Planning
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VIRTUAL SEMINAR

Join Zoom Meeting Link:
https://zoom.us/j/98418995526?pwd=aTYwd3JVNGg4alMzQmd1NTY3ekNKQT09
Meeting ID: 984 1899 5526
Passcode: 691732

ABSTRACT:

Regional-level approach to resilience assessment

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Resilience is the ability of a system to withstand and rapidly recover from shocks of various nature. Over the last decade, "resilience" has become a common keyword used to describe one of the most desirable features of structures, infrastructure, communities, and complex systems in general. Utility companies from Verizon to Con Edison, as well as major cities, counties, and entire states had to train their employees to perform "disaster resilience analyses", to identify weaknesses in their systems and address them. This opened a broad market for consulting firms who perform these assessments. The current situation has shown that our society needs to be resilient not only to natural disasters like earthquakes and hurricanes, but also other threats, like pandemics, environmental hazards, and economic downfalls.

Resilience assessment requires engineers to focus on functionality, rather than damage, and functionality is typically better captured at the system-level. Traditional risk analysis and hazard models focus on individual structures and sites, but the focus on resilience required scholars and practitioners to change the scale of analysis, to cover entire regions. This seminar will discuss possible solutions to the challenges that arise from regional analysis, such as the need for multi-scale models and the extensive use of accurate but efficient surrogate models, the necessity to go beyond site-specific hazard representations; the importance of capturing the role of humans-in-

the-loop and their decision making, as well as the complex dependencies and interdependencies emerging among the various agents in these complex situations.

BIO: Dr. Bocchini is an Associate Professor and Director of Graduate Programs in the Department of Civil and Environmental Engineering of Lehigh University. His research is related to the application of probabilistic concepts, computational mechanics, operational research, and other analytical and numerical tools to civil engineering problems. Currently, his main focus is resilience assessment and optimal allocation of resources for the design, retrofit, and recovery of infrastructure systems subjected to extreme events. He leads large interdisciplinary teams and published his research in premiere archival journals; his paper on resilience and sustainability is the most cited in the ASCE-Journal of Infrastructure Systems.