

# Center for Infrastructure Engineering Studies



*research seminar via ZOOM*

## Civil Infrastructure Systems Resilience: Models and Algorithms

### Abstract

This talk will describe developed mathematical and algorithmic approaches for quantifying and maximizing the resilience of transportation systems and the societal functions they support. Transportation networks are interconnected with other critical lifelines, such as power and water supply. Together, these lifelines support societal activities occurring within building facilities related by a common function, e.g. health care. Moreover, the abilities of system users, e.g. transit riders, play an important role in the services they experience. Thus, both the behavior of technical components and how these systems enable their varying users to adapt are crucial. These considerations are incorporated and resilience is discussed in the context of current application and a future with digital twinning and automation.

### Biographical Sketch

Dr. Elise Miller-Hooks holds the Bill and Eleanor Hazel Endowed Chair in Infrastructure Engineering at George Mason University, is an advisor to the World Bank Group, and the founding Editor-in-Chief of IFORS/Elsevier's Sustainability Analytics and Modeling journal. Prior to this, Dr. Miller-Hooks served as a program director at the U.S. National Science Foundation and on the faculties of the University of Maryland, Pennsylvania State University and Duke University. Dr. Miller-Hooks received her Ph.D. (1997) and M.S. (1994) degrees in Civil Engineering from the University of Texas – Austin and B.S. in Civil Engineering from Lafayette College (1992). She has expertise in: disruption planning and response; multi-hazard civil infrastructure resilience quantification and protection; stochastic and dynamic network algorithms; transportation systems engineering; intermodal passenger and freight transport; real-time routing and fleet management, including paratransit, delivery, ridesharing and bikeways; and collaborative and multi-objective decision-making.



**Dr. Elise Miller-Hooks**

**Professor & Hazel Chair in  
Infrastructure Engineering**

**George Mason University**

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**Thursday, February 10,  
2022**

**Time: 12:00 pm cst**

**Zoom Meeting ID: 997  
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**Passcode: 641077**

**[Link to join the Seminar](#)**