



## Séminaire du CIRRELT Seminar

**Elise Miller-Hooks**

University of Maryland, USA



### Multi-Hazard Resilience Quantification Tools for Civil Infrastructure Systems

**Abstract :** Secure and functioning civil infrastructure systems are of paramount importance to society. To ensure that effective services can be provided in a disaster's aftermath enabling society to recover, agencies charged with designing, constructing, managing and operating these systems must invest in measures that prevent or mitigate the effects of disaster incidents and less major disruptions. This talk will describe developed mathematical tools for quantifying the maximum resilience level of passenger and freight transportation networks and simultaneously determining the optimal set of mitigation, preparedness and recovery actions necessary to achieve this level. These tools recognize that post-disaster performance of these networks depends not only on the inherent capability of the system to absorb externally induced changes, but also on the actions that can be taken in the immediate aftermath of the disaster to preserve or restore system performance. Specific examples from applications to ports, freeways, and airport pavement networks will be provided. Transportation networks, are interconnected with other critical lifelines, including power, telecommunications, water and wastewater. Together, they support societal functions within building infrastructure networks. Ongoing research in this area of interdependency characterization in resilience quantification for transportation and infrastructure-based societal systems will also be introduced.

**Note: Professor Elise Miller-Hooks** is Program Director of the NSF Civil Infrastructure Systems Program in the Civil, Mechanical and Manufacturing Innovation (CMMI) Division of the Engineering (ENG) Directorate and Co-lead of the Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) Program shared by the Computer and Information Science & Engineering (CISE), ENG, and Social, Behavioral and Economic Sciences (SBE) Directorates. She is Full Professor in the Department of Civil & Environmental Engineering at the University of Maryland.

elisemh@umd.edu and [www.millerhooks.umd.edu](http://www.millerhooks.umd.edu)

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Pavillon André-Aisenstadt  
Université de Montréal

Ouvert à tous / Open to all

**Organisateur / Organizer**  
**Patrice Marcotte**

