



EMI 2026 International Conference

Napoli, Italy | September 2 — 4 2026

2026

MINI-SYMPOSIUM

MS #19

OPTIMIZING RESILIENCE & ROBUSTNESS OF ENGINEERING SYSTEMS UNDER EXTREME HAZARDS

Keywords:

resilience, robustness, uncertainty
quantification, probabilistic mechanics,
performance-based design

ABSTRACT

Engineering systems and civil infrastructure are increasingly exposed to extreme hazards such as earthquakes, floods, hurricanes, technological failures, and cascading events. In the face of growing uncertainties driven by climate change, urbanization, and aging infrastructure, there is a critical need to move beyond traditional deterministic design toward robust and resilient performance-based frameworks grounded in engineering mechanics.

This mini-symposium will bring together researchers and practitioners to discuss mechanics-based principles and computational strategies for the design and assessment of resilient systems. Emphasis will be placed on integrating probabilistic mechanics, multi-objective optimization, and data-driven approaches to improve decision-making under uncertainty.

Topics of interest include, but are not limited to:

- Mechanics-driven formulations for robust and resilient design
- Reliability-based optimization under uncertainty
- Probabilistic and stochastic mechanics of structures and materials
- Performance-based and risk-informed design frameworks
- Surrogate and reduced-order modeling techniques
- Data-driven and hybrid computational approaches
- Decision-making and adaptive control strategies under uncertainty

Mini-Symposium Organizers

Prof. G.C. Marano

Politecnico di Torino,
Turin, ITALY

G. Datta

Independent Researcher,
INDIA



<https://emi-ic.asce.org/>

IMPORTANT DATES

Jan 8, 2026 – Abstract Submission Opening
Feb 28, 2026 – Abstract Submission Deadline
Apr 16, 2026 – Abstract Acceptance Notification
Jun 12, 2026 – Author Registration Deadline