

Graduate Student Lecture Series

Presents

Nonlinear Finite Element Validation with Nonlinear Dynamics: When can a Historic Masonry Monument be Left without Repair?

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Today's historic masonry monuments were built based on geometric pre-scientific tools, which were developed through accumulated experience rather than modern engineering codes. Contemporary engineers, when called upon to assess the performance of a historic building or to design a retrofit scheme, are confronted with a perplexing structure, which clearly defies the rules of modern engineering. Although several techniques have been proposed in the last century, much needs to be done to accurately understand the real behavior of masonry monuments. Given the known vulnerability of masonry monuments to earthquakes and the number of in-service historic buildings in seismically active regions, assessment of the dynamic response of these structures is particularly important. The present study hypothesizes that the nonlinear finite element method, when validated against nonlinear dynamic testing, can be used to understand the earthquake performance of a monumental historic masonry structure. Based on this hypothesis, the prior knowledge on the topic is evaluated with a critical view and to remedy this problem, a proposed research program is presented.

**Thursday, January 25,
12:00- 1:00 P.M.
107 Engineering Unit B**

Next Lecture: Leidy Klotz
Thursday, February 22
12:00- 1:00 P.M.
107 Engineering Unit B
"The Relationships between
Transparency, Process Mapping, and
Sustainable Building Delivery"

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