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Seismic Damage Assessment at Regional Scales through Rupture-to-Rafters Modeling and Simulations

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Abstract

Recent advances in performance-based earthquake engineering and existing information technologies provide opportunities to develop extremely granular inventories of the built environment and assess its vulnerabilities to earthquakes at region at regional scale. This presentation outlines various necessary ingredients for achieving regional seismic loss assessment ranging from physics-based simulation of scenario-based earthquakes, to development of infrastructure/asset inventories, to distributed sensor networks. Two case-studies are offered as examples, both involving a scenario-based earthquakes for the cities of Los Angeles and Istanbul.