

Landslide vulnerability of reinforced concrete structures

SPEAKER

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ABSTRACT

Every year landslides occur all over the world as a result of several triggering events such as rainfalls and earthquakes, causing fatalities and heavy damage to buildings and infrastructure systems. Recent loss data sets for non-seismically triggered landslides have highlighted that 2620 fatal landslides occurred between 2004 and 2010 worldwide, causing 32,322 recorded fatalities in 7 years. Therefore, landslide risk assessment and management is a key challenge for modern society.

This seminar will deal with landslide vulnerability of elements at risk such as houses, lifelines and people, according to a probabilistic framework of quantitative risk analysis that allows risk-informed decision making. In this context, the presentation will focus on physical vulnerability which is a major component of landslide risk together with hazard and exposure. The vulnerability of reinforced concrete (RC) framed structures to flow-type landslides will be discussed. This topic is of special interest because (i) flow-type landslides are rapid movements of mass with high proportion of water to solid material that frequently cause huge amounts of losses, and (ii) RC structures form a large part of the worldwide built heritage. Analytical models will be used to assess landslide vulnerability by means of fragility analysis, accounting for uncertainty in several modelling parameters. Analysis results will show the impact of building types and capacity models on landslide fragility estimates.

SHORT BIOGRAPHY OF THE SPEAKER

Fulvio Parisi is Assistant Professor of Structural Engineering of the Department of Structures for Engineering and Architecture at University of Naples Federico II, Italy, where he received his Ph.D. in Seismic Risk in 2011 with the thesis “Non-linear seismic analysis of masonry buildings”. His research mainly focuses on performance-based design and assessment of structures subjected to natural and man-made events, experimental testing of materials and structures, back-analysis of structural failures, and cultural heritage preservation. Dr. Parisi authored over 60 peer-reviewed papers and computer tools for modelling and analysis of masonry structures. Dr. Parisi is referee for 18 international journals and is involved in research programmes dealing with earthquake engineering and cultural heritage structures. He is Editorial Board member of the ASCE Journal of Performance of Constructed Facilities and Working Group member of European Association for Earthquake Engineering.