



Department Seminar

On the complexity of seismic waves trapped in shallow geologic features

Speaker: Prof. Domniki Asimaki, California Institute of Technology (Caltech), USA

Date and Time: February 11th, 9 pm

Link: [Click here to join the meeting!](#)

Abstract: Most earthquake engineering and seismological models make the sweeping assumption that the world is flat. The ground surface topography, however, has been repeatedly shown to strongly affect the amplitude, frequency, duration and damage induced by earthquake shaking, effects mostly ignored in earthquake simulations and engineering design. In this talk, I will show a collection of examples that highlight the effects of topography on seismic ground shaking, and I will point out what these results suggest in the context of the current state-of-earthquake engineering practice. Examples will range from semi-analytical solutions of wave propagation in infinite wedge to three-dimensional numerical simulations of topography effects using digital elevation map-generated models and layered geologic features. I will conclude by demonstrating that ‘topography’ effects vary strongly with the stratigraphy and inelastic behavior of the underlying geologic materials, and are in fact much less topography-dependent than commonly understood.

Speaker Bio: Domniki Asimaki is a Professor of Mechanical and Civil Engineering at Caltech. She has a bachelor’s diploma from the National Technical University of Athens, Greece (1998), and an MS (2000) and PhD (2004) from the Department of Civil and Environmental Engineering at MIT. Her research focuses on the understanding and simulation of 3D site effects, and their impact on the design and performance of geotechnical systems. She has been on the ASCE GeoInstitute Board of Governors since 2018; and is an associate editor for the ASCE Journal of Geotechnical and Geoenvironmental Engineering, for Earthquake Spectra, and for the Bulletin of Earthquake Engineering. Among other awards, she has received the 2009 Arthur Casagrande Award from the ASCE Geo-Institute, the 2012 Shamsheer Prakash Research Award in Geotechnical Earthquake Engineering, the 2015 Young Investigator Award in Geotechnical Earthquake Engineering from the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), and the 2018 Bodossaki Award for Excellence in Engineering and Applied Mechanics.

