

ARMA Future Leader Webinar Series

Every Two Weeks on Fridays 9-10 AM MT (11 AM -12 PM ET)

Seismic effects and mitigation control for tunnels

Dr. Haitao Yu, Tongji University, China

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<https://westernuniversity.zoom.us/j/99355457319>

Abstract

This presentation focuses on current progress on seismic analysis and mitigation control methods for tunnel structures, including simplified models and analytical solutions for seismic design of long tunnels; multiscale and continuous-discontinuous dynamic coupling methods for large-scale ground-tunnel simulation under strong earthquakes; multi-point shaking table test platform and hybrid test method for long tunnels subjected to non-uniform excitations. Damage mechanisms of tunnel structures under strong earthquakes are discussed from three aspects including tunnel cross-section response, longitudinal response, and spatial effect caused by transitions of stratum conditions along the tunnel as well as structural stiffness. A couple of novel technologies for seismic mitigation control and resilience design for tunnel structures are also introduced.

Biography

Dr. Haitao Yu is a tenured Professor in Civil Engineering at Tongji University, China. He received his Ph.D. in Tunneling and Underground Engineering from Tongji University and studied Geotechnical Engineering at Purdue University from 2009 to 2010. Dr. Yu's research interests focus on seismic design and analysis of underground structures, and seeking solutions, analytically, numerically and physically. He has published over 200 peer-reviewed journal papers and has more than 50 invited presentations at conferences and at other technical gatherings. He is the Editor of the journals Tunnelling and Underground Space Technology and Frontiers of Structure and Civil Engineering and a member of ARMA's Future Leaders Program. Dr. Yu has received a number of talent awards such as the Outstanding Young Scientist Award (2023) from the ICGdR, the Excellent Young Scientist Award (2019) from the NSFC, and the Shanghai Youth Scientist Talents Award (2020) from the Shanghai Association for Science and Technology. He has been selected as one of Worlds Top 2% Scientists from 2020 to 2022.

