

DISTINGUISHED SEMINAR SERIES

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Damping in Buildings for Wind Resistant Design: Amplitude Dependency and Critical Tip-drift-ratio of Dynamic Properties



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120PM - 1PM
Eastern

Churchill
103

*We look forward to
you joining us.*

Abstract: Physical causes of damping in buildings, the importance of appropriate use of damping evaluation techniques, and points to note for accurate evaluation of damping are first discussed. Then, the variation of damping ratio with amplitude is discussed, especially in the amplitude range relevant to wind-resistant design of buildings, i.e. within the elastic limit. The general belief is that damping increases with amplitude, but it is emphasized that there is no evidence of increasing damping ratio in the very high amplitude range within the elastic limit of main frames, unless there is damage to secondary members or architectural finishings. The damping ratio decreases with amplitude from a certain tip drift ratio defined as “critical tip drift ratio,” after all friction surfaces between primary/structural and secondary/non-structural members have been mobilized.

Bio: Yukio Tamura is a Professor and the Advisory Director of Research Center of Wind Engineering, Environment and Resources, School of Civil Engineering, Chongqing University, China. He is also a Professor Emeritus of Tokyo Polytechnic University (TPU), Japan, and the Honorary Director of the TPU Wind Engineering Research Center. He served as the President of the International Association for Wind Engineering (IAWE) for eight years from 2007 to 2015. He is now serving as Honorary Chairman of the International Thematic Group for Wind-Related Disaster Risk Reduction under the auspices of the United Nations Office of Disaster Risk Reduction. He is also serving as an Honorary/Guest/Adjunct Professor of around 20 universities/institutes in China, Korea, Malaysia, Poland and the USA. Due to his internationally recognized outstanding academic achievements, he has received many awards including the ASCE Jack E. Cermak Medal in 2004, the ASCE Robert H. Scanlan Medal in 2016, as well as the IAWE Alan Davenport Medal in 2016. In addition, due to his various professional contributions, he has received other important awards, including the Japan Association for Wind Engineering (JAWE) 2015 Design Award for his contribution to the wind resistant design of the 634m-high Tokyo Sky Tree and the Chinese Government Friendship Award in 2017. Professor Yukio Tamura has been a member of the Engineering Academy of Japan since 2011, a Foreign Fellow of the Indian National Academy of Engineering since 2013, and a Foreign Member of the Chinese Academy of Engineering since 2017.



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