

Course: ASEISMIC DESIGN OF BUILDING STRUCTURES

**Seminar**  
**LATERAL STABILITY SYSTEM**  
**OF HIGH-RISE BUILDINGS**  
12<sup>th</sup> of May, 2017 (ROOM T)

Lecturer: Ph.D. Eng. Daniele Dozio - ARUP Italia

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The lateral stability system of tall buildings is the main topic of this presentation. Case histories of recent realizations of high-rise building projects by Arup in Italy and abroad are presented and discussed. The dynamic response of tall buildings plays a significant role in determining both design wind loading and seismic behaviour. The degree of energy dissipation, or damping, that a building can provide directly affects the resonant response and thus the effective design loading. Since there is very little codified guidance on what level of damping to assume for a tall building, this presentation reviews measurements of damping on tall buildings and compares them with values in common usage. It is found that, particularly for buildings above 250 m high, damping ratios commonly used in design are inappropriate and un-conservative. This issue relates to serviceability, ultimate design wind loading and seismic response. The presentation concludes that the addition of supplementary robust damping is often the most economic method of controlling the dynamic response of a tall building, as well as reducing the consequence of the uncertainty of intrinsic damping.

**DANIELE DOZIO**

Daniele is a Ph.D. Senior Structural/Seismic Engineer who joined ARUP in 2008, after getting his Ph.D. at the Politecnico di Milano. He took part in the structural design and construction administration of some high rise buildings in Italy and abroad. His experience also includes seismic design/assessment of new/existing buildings using nonlinear response history analysis, designing and testing of prestressed/post-tensioned RC and fiber reinforced concrete (FRC) structures. His academic researches dealt with buckling issues of thin webbed beams and structures made with steel fiber reinforced concrete.