

Università degli Studi di Pavia

Dipartimento di Meccanica Strutturale

In collaborazione con

Centro di Simulazione Numerica Avanzata – CeSNA

Istituto Universitario di Studi Superiori

Aeroelastic instabilities in suspension and arch bridges via geometrically exact formulations

Aeroelastic phenomena represent challenging limit states for suspended structures, especially for long-span bridges. The onset of the underlying instabilities and the post-critical states depend significantly on the prestressed conditions. This motivates the need for accurate, reliable and effective continuum-based nonlinear formulations for these structures subject to the aerodynamic loadings. It is shown how the combination of the special Cosserat theory of rods and the geometrically exact theory of cables can lead to the fully nonlinear equations of motion in a form amenable to parametric computational studies of the onset of torsional divergence (suspension bridges) or flutter. In the latter case, the study of flutter for the Bridge of Sound (Ponte della Musica in construction in Rome) will be highlighted.

Prof. Walter Lacarbonara

Università “La Sapienza” di Roma

Venerdì 18 Giugno, Aula MS1, 14.30 – 16.30

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