Session ID: IDD-8

Title
RESEARCH FRONTIERS IN SEISMIC ISOLATION AND DAMPING SYSTEMS FOR STRUCTURES AND INFRASTRUCTURES

Convenors
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Description
The design of earthquake-resilient structures and infrastructure has been continuously enhanced in the last years, favouring the adoption of innovative systems and technologies to mitigate seismic effects. To this scope, well-established techniques already available on the market include passive vibration control systems based on base isolation and supplemental damping.

The design requirements are different for buildings and bridges. For buildings, one of the most promising recent approaches is the low-damage design and new research trends also include the development of technologies for the protection of non-structural components (e.g., devices featuring adaptive hysteretic response like magneto-rheological dampers).

For bridges, seismic isolation is usually achieved by decoupling the deck from the substructure, obtaining a significant acceleration reduction. To limit the large lateral displacement of the deck, hysteretic and viscous dampers are added to the isolation system.

A relevant topic is the development of devices and technologies aimed at favouring the re-centring of the structure. Some examples include dampers with shape memory alloys, displacement gap devices, and variable friction sliding isolators.

This Technical Session aims to draw the interest of academics, researchers, and practitioners, by displaying recent progress in the field and presenting the most recent contributions to the improvement of current technologies for vibration control of steel, RC and masonry structures and infrastructures, as well as timber frame buildings.

The technical session welcomes original research papers, presentation of case studies, and state-of-the-art reviews that include, but are not limited to, the following topics:
- novel base isolation and damping systems;
- theoretical models and numerical analyses;
- experimental characterisation of novel devices;
- experimental testing of structures implementing isolators and/or dampers;
- seismic retrofit of buildings and bridges.

Invited Speakers
A. Calabrese [4], P. Castaldo [3], M. Dicleli [5], P. Colajanni [6], D. Whittaker [7], F. Freddi [8], M. Lamperti Tornaghi [9], M. Latour [10], A. Recupero [11], M. Preti [1]

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