

**Session ID:** IDD-10

**Title**

SEISMIC PERFORMANCE OF BASE ISOLATED STRUCTURES DURING EARTHQUAKES

**Convenors**

G.P. Cimellaro <sup>1</sup>, B. Sadan <sup>3</sup>, C. Tuzun <sup>2</sup>

**Description**

Despite that it has long been assumed that the consideration of the effect of the horizontal component of earthquakes suffices for seismic reliability of structures, the vertical component should be consistently considered along with the horizontal one. This issue becomes a great concern for conventional seismic isolation system that can reduce the structural effects of the horizontal component of an earthquake, while the vertical component is transmitted directly into the structure. As such, there is considerable and increasing research interest worldwide in vertical and three-dimensional isolation systems to protect a wide range of structures and valuable facilities such as heritage assets and specialized equipment such the ones in hospitals. During February 6th 2023 earthquake in Turkey, many critical infrastructures and health care facilities experienced collapse or heavy damages, while other base isolated structures performed pretty well. The scope of this session is to collect experiences and proposals to expand traditional base isolation schemes toward innovative solutions with special mention to three-dimensional base isolation. Contributions to these issues are critical to improve the current isolation technologies toward resilience. This session aims to attract academics, researchers, students, post-graduate students and professional engineers dealing with the following advanced topics:

- Innovative base isolation devices;
- Three-dimensional isolation solutions;
- Negative stiffness mechanisms;
- Machine learning for smart isolation solutions;
- Embedded monitoring systems in isolation devices.

The technical session is organized under the auspices of ASSISi, the Anti-Seismic Systems International Society.

**Invited Speakers**

M. Constantinou <sup>4</sup>, G. Warn <sup>5</sup>, S. Taiki <sup>6</sup>, R. Boroschek <sup>7</sup>, S. Nagarajaiah <sup>8</sup>, P. Clemente <sup>9</sup>, Y. Zhou <sup>10</sup>, Y.-N. Huang <sup>11</sup>, C. Christopoulos <sup>12</sup>, Y.-N. Huang <sup>13</sup>

**Affiliations**

<sup>1</sup> Politecnico di Torino, Turin, Italy, <sup>2</sup> Yasar University, Bornova/Izmir, Turkey, <sup>3</sup> MEF University, Sariyer, Istanbul, Turkey, <sup>4</sup> University at Buffalo, The State University of New York (SUNY), Buffalo, NY, USA, <sup>5</sup> Penn State University, University Park, USA, <sup>6</sup> Toyohashi University of Technology, Toyohashi, Japan, <sup>7</sup> University of Chile, Santiago del Chile, Chile, <sup>8</sup> Rice University, Houston, USA, <sup>9</sup> ENEA, Rome, Italy, <sup>10</sup> Tongji University, Shanghai, China, <sup>11</sup> National Taiwanese University, Taipei, Taiwan, <sup>12</sup> University of Toronto, Toronto, Canada, <sup>13</sup> National Taiwan University, Taiwan