

**Session ID:** SDM-3

**Title**

CHALLENGES IN THE BEHAVIOR, MODELING, ANALYSIS, AND DESIGN OF SELF-CENTERING STRUCTURAL SYSTEMS

**Convenors**

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**Description**

Since the Performance-Based-Design approach emerged, emphasis is put on limiting both structural and nonstructural damage. Linear elastic behavior of structural systems can efficiently reduce structural damage and often also damage to drift sensitive nonstructural elements. However, such a design often attracts very large forces, hence large structural elements and foundations are required. Furthermore, floor accelerations are expected to be very large, leading to high damage to acceleration sensitive nonstructural elements. Plastic design is therefore often used to reduce the forces and accelerations in the structure also leading to smaller construction costs and lower floor accelerations. On the other hand, yielding means structural damage and sometimes increased drifts. Furthermore, residual drifts become an issue, sometimes prohibiting repairing the structure after a seismic event. To enjoy both worlds with no or repairable structural damage and no residual drifts on the one hand, and small forces in the structural system and floor accelerations on the other hand, rocking system with or without additional energy dissipation devices have been proposed and investigated for both new buildings and as retrofit for existing ones.

This session is intended to present recent advances related to the behavior, modeling, analysis and design of recentering structural systems for both new buildings and as seismic retrofit. These may relate to both experimental and analytical aspects of rocking systems, both structural and nonstructural.

**Invited Speakers**

J. Restrepo <sup>4</sup>, A. Palermo <sup>5</sup>, A. Barbosa <sup>6</sup>, C. Christopoulos <sup>7</sup>, Y. Xiao <sup>8</sup>, M.I. Qureshi <sup>9</sup>, A. Moghadam <sup>10</sup>, S. Buddika <sup>11</sup>, P. Sideris <sup>12</sup>

**Affiliations**

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