

Linear Semi Active Controller of Magneto-Rheological Damper for Seismic Vibration Attenuation

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Abstract : In structural vibration caused principally by an earthquake excitation, the most vibration's attenuation system used recently is the semi active control with a Magneto Rheological Damper device. This control was a subject of many researches and works in the last years. The big challenges of searchers in this case is to propose an adequate controller with a robust algorithm of current or tension adjustment. In this present paper, a linear controller is proposed to control the MR damper using to reduce a vibrations of three story structure exposed to El Centro's 1940 and Boumerdès 2003 earthquakes. In this example, the MR damper is installed in the first floor of the structure. The numerical simulations results of the proposed linear control with a feedback law based on clipped optimal algorithm showed the feasibility of the semi active control to protecting civil structures. The comparison of the controlled structure and uncontrolled structures responses illustrate clearly the performance and the effectiveness of the simple proposed approach.

Keywords : MR damper, seismic vibration, semi-active control

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