

عنوان مقاله:

The Evaluation of Instantaneous Semi-Active Control Performance on a 3-Dimensional Building

محل انتشار:

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خلاصه مقاله:

Semi active control systems have been used successfully in civil engineering applications in order to deal with seismic loads. For the application of semi active systems, Magnetorheological (MR) dampers have received much attention for their magnificent performance in reducing the structural vibrations. Instantaneous optimal control algorithm has been introduced to calculate the required control forces for safeguarding the structures. In the present paper, a semi active control strategy based on the instantaneous optimal method is presented to control the seismic responses of the building structure. The MR damper is used as the semi active control device to generate the damping forces and an inverse model is used to regulate the required voltages for activating the dampers. A numerical analysis on a 12-story three-dimensional steel building structure is carried out to compare the effectiveness of the instantaneous control strategy with the classical linear (LQR) control strategy. The results show that the proposed control system leads to a significant reduction of structural responses

کلمات کلیدی:

instantaneous, semi active control, MR damper, inverse model, LQR method, threedimensional building

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