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ADAPTIVE INERTIAL SHOCK-ABSORBER FOR VIBRATION DAMPING

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Abstract. *The goal of this paper is to briefly describe the concept of a new shock-absorber and to discuss its unique characteristics in reference to the problems of vibration damping. The specific construction of the so-called SPIN-MAN device is introduced and the semi-active control performed on this device is presented. In order to prove the potential of presented shock-absorber, one of possible control strategies is described and results of its numerical simulation are shown. A specific control technique is demonstrated as the main source of significant improvement of the overall impact damping process. Possibility of the shock-absorber application for mitigation of earthquakes effects is investigated and features of the system enabling adaptation to identified impact conditions are indicated. Various applications of the SPIN-MAN are considered and requirements resulting from them are specified. Challenges which have to be overcome are presented and some solutions are proposed.*