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Experimental and numerical study on magneto rheological intelligent materials and dampers

Magnetorheological (MR) fluids and MR dampers are the primary elements of MR intelligent control system. In the presentation, three kinds of MR fluids with different coating materials were prepared and the samples with both high sedimentation stability as well as adjustability through optimized selection were obtained. Meanwhile, the proposed microchain model was verified to be beneficial to the performance optimization of MR fluids. Correspondingly, different types of MR dampers, among which the maximum damper force could reach 48 tons, were fabricated and tested. The performance of MR dampers can be described precisely with the deduction of the mathematical model considering nonlinear hysteresis

curves and temperature rise during vibration. Based on the combination of comprehensive theoretical derivation and experimental study of both materials and dampers, the MR intelligent earthquake mitigation technique was promoted.

Biography

Zhao-Dong Xu is Vice President of RC & PC Key Laboratory of Education Ministry, National Distinguished Youth Professor, Changjiang Scholar Distinguished Professor in China. He won the national prize of technical invention, the gold medal of international invention exposition in Geneva. He has published 279 journal papers and 5 monographs in Elsevier, John Welly etc. He has been granted 83 invention patents. He has been invited as the keynote speaker for 37 times.

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