

DEVELOPMENT OF ASYMMETRIC BOUC-WEN MODEL WITH LINEAR STRENGTH-DEGRADATION FUNCTIONS

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In this study, an asymmetric Bouc-Wen model (BW model) is developed in which strength degradation is modeled with piecewise linear functions. This paper first reviews previous models, including the original BW model, the Wang-Wen model, and the generalized BW model and its modified version. In order to accurately describe the asymmetric strength degradation often encountered in many seismic engineering applications, this study extends the BW models with combining piecewise linear functions. A framework for parameter identification is then formulated, describing the objective function and constraint conditions required for the convex piecewise post-yielding functions. The proposed model is verified on the basis of the cyclic seismic test results of welded steel moment connections with composite floor slabs.

Keywords: hysteresis model, asymmetric hysteresis, Bouc-Wen model, welded steel moment connections