## Analytical Investigation on Hysteretic Characteristics of

### **Buckling Resistance Steel Damper**

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#### Abstract

This paper summarizes the development and analytical investigation of a new steel seismic energy dissipation device designed for earthquake disaster mitigation of building structures. The widely used steel damper called shear panel damper has a limitation on the cyclic load resistance as it creates pinching at initial displacement. In order to come up with stable hysteresis loops without pinching, we proposed a novel steel damper called buckling resistance steel damper (BRSD). The hysteresis characteristics and energy dissipation capacity of the proposed damper was evaluated using non-linear finite element analysis considering depth-to-thickness (d/t) ratio as main parameter. Quasi-static cyclic loading test was carried out on four BRSD with different d/t ratios to verify the conducted FE analysis and a good agreement between experimental and analytical results were found.

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**Keywords:** Buckling Resistance Steel Damper, FE analysis, Hysteretic Behavior, Energy Dissipative Device, D/t ratio

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