Discussion on “Optimum placement and characteristics of velocity-dependent dampers under seismic excitation” by Seyed Amin Mousavi and Amir K. Ghorbani-Tanha

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The authors presented an interesting aspect in viscous or visco-elastic damper optimization under earthquake excitation. They also reviewed the research development in the field of passive damper optimization.

They introduced ‘a drift-based formulation’ in Section 2 to deal directly with the interstory drift which is an important performance measure in seismic design. However this formulation is essentially the same as the formulation to derive the story displacements and subtract the lower-story one from the upper-story one. This kind of formulation had already been proposed in a series of researches on damper optimization. For example, Eq. (18) is equivalent to the corresponding equation in Takewaki (1997, 1998, 1999a, b, 2000) and Eq. (21) is equivalent to the formulation in Takewaki (1999a). Many researchers refer to this formulation and employ that in their passive damper design problems (Aydin *et al.*, 2007; Cimellaro, 2007; Cimellaro and Retamales, 2007; Viola and Guidi, 2009). Moreover, Eq. (22) is similar to the formulation in Takewaki (2001).

Some of these works published in 1998, 1999, 2000, 2007 and 2009 were not referred in the present paper. The authors did refer to Takewaki (1997) in the Introduction section. Actually, it should be cited at the point where the formulation is developed. In addition, the authors also presented ‘an incremental optimization procedure’ in Section 3.2. This incremental optimization procedure is similar to the formulation given in the references (Takewaki, 1997; 1998; 1999b; 2000). The minimum transfer matrix criterion in Section 3.1 seems to be a simple extension of Takewaki (1997, 1998) for the fundamental natural frequency.

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