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Performance Analyses of Building Suspension Control with Inerters

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Abstract

This paper discusses the application of a new mechanical element, called Inerter, to building suspension control. The inerter was proposed as a real two-terminal mechanical element, which is a substitute for the mass element, with the applied force proportional to the relative acceleration across two terminals. To investigate the performance benefits of building suspension with inerters, three building models were utilized to analyze the performance using two proposed performance indices. From the simulation results, inerters were deemed effective in reducing vibrations from earthquakes and traffic.