

Fault Detection of Vertical Dampers of Railway Vehicles Based on Phase Difference of Vibrations

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This paper presents a technique for damper fault detection based on the phase difference between the bounce and the pitch vibration of bogie frames or a car body obtained with inertial sensors, as a method without mounting sensors in oil dampers. The result of vibration excitation test with one vehicle on a testing plant demonstrates that the fault of a primary vertical damper was detectable by evaluating the phase difference between the bounce and the pitch vibration of the bogie frames. The result of running test on a meter gauge line demonstrated that the fault of a secondary vertical damper was detectable based on the phase difference between the bounce and the pitch vibration of the car body.