Suppression of Vertical Vibration in Railway Vehicles by Damping Control of Axle Dampers and Air Springs

Yoshiki SUGAHARA Akihito KAZATO
Reiko KOGANEI Takahiro TOMIOKA

In order to improve the ride comfort of railway vehicles, suppression of vertical bending vibration as well as rigidbody vibration of carbody becomes essential. In this paper, the authors propose a system which aims to reduce the bending and rigid vibration simultaneously by introducing damping control devices in the primary and secondary suspension. The system is composed of a damping control system of axle dampers and that of air springs; the former one is applied for suppressing the first mode bending vibration, the latter one for suppressing the rigid mode vibration. As the results of the excitation tests at a rolling stock test plant and the running tests on Sanyo-Shinkansen line, we show that the control method effectively reduces the vertical vibration acceleration of the carbody floor.