

**The Management Method for Large Wheel Load and Lateral Force
Applying Axle-box Acceleration and Track Irregularity**

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A very large wheel load and lateral force are frequently due to track irregularities of a short wavelength. These large loads are undesirable, for instance, they have great influence on deterioration to the track material and an additional volume of track maintenance. In this study, we paid attention to the axle-box acceleration, which can estimate a wheel load, a lateral force, and a correlation of the short wavelength. First, we analyzed the frequency characteristics of the relation between wheel load, lateral force, axle-box acceleration and track irregularities. In addition, we proposed a prediction technique for the wheel load and the lateral force, which contained a short wavelength component by using the axle-box acceleration and the track irregularities.