Evaluation of Bridge Noise Increase Due to Wheel Local Wear and Detecting Method for Amount of the Wear

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Local wear, the length of which is relatively long in the circumferential direction, occurs incidentally on a railway wheel tread. In this paper, based on the depth of the wear and the spatial frequency spectra, the bridge noise and the associated vibrations are evaluated when trains run at high speed. It is found out that the bridge noise and the associated vibration are increased as the wear depth is increased. To develop a detecting method for the amount of local wear from the bridge vibration, the relation between the rail vibration and wear depth or the bridge vibration are investigated. An appropriate bridge structure to estimate the amount of the wear is found out to be an adjusting girder between rigid-frame viaducts. The depth of the wear can be estimated by this method quantitatively.