

한국형 고속철도의 소음 방사특성에 관한 연구

김재철[†] (한국철도기술연구원) · 구동회^{*} (한국철도기술연구원) · 문경호^{*} (한국철도기술연구원), 이재응^{**} (중앙대학교)

A Study on Radiation Characteristics of Noise Sources for Korean Train Express

Jae Chul Kim, Dong Hoe Koo, Kyung Ho Moon and Jae Eun Lee

Key Words : Railway noise(철도소음), Korean Train Express(한국형 고속철도), Noise Characteristics(소음 방사특성), Rolling Noise(전동음), Dipole Source(쌍극자 음원) .

Abstract : In order to control the railway noise, the radiation characteristic of the noise during the train passage should be analyzed. Generally, the major noise sources for Korean Train Express are the rolling noise and power unit noise up to 300km/h. In this paper, we describe on a train model that is considered to be a row of point sources to calculate the radiation characteristic. The calculation results are compared with short distance measurement. It is shown that the radiation characteristic of the rolling noise is dipole type. The noise generated by the power unit is radiated as the cosine type. The noise level at an observer is increased in the direction of motion and reduced in the direction opposite to the motion with increasing of the train speed.

레일이음매에서 발생하는 궤도동적거동에 대한 연구

강윤석^{*} · 양신추^{**}

A Study on the dynamic behavior of rail due to dipped joints

Kang, Yun Suk · Yang, Shin Chu

Abstract : When vehicle travelling along the track which has irregularity such as vertical profile, dynamic forces arise at the Wheel/Rail contact patch by wheel/rail interaction. In particular short wavelength irregularities on dipped joint and small stiffness of connecting rail bring about intense wheel/rail dynamic effects at higher speed. In the paper, a new model for dipped joint rail is developed to study dynamic behavior of track . A cusp behavior on dipped joint was defined by its amplitude and decay factor, which was presented by FRA track classes. The result of case study are presented, which show wheel rail contact force in each track classes, train operation speed and bending flexible rigidity ratio of fishplates which are connecting the rail.