

**Methods for Detecting and Predicting Localized Rapidly Progressing Deterioration
of Track Irregularity Based on the High Frequency Measured Data**

Hirofumi TANAKA Syuhei YAMAMOTO

Takashi OSHIMA Masashi MIWA

In this study, we developed methods to detect and predict localized rapidly progressing deterioration of track irregularity based on the high frequency measured data. First of all, a highly accurate positional correction technique was developed. This technique searches for such phase that the correlation coefficient between waveforms of the different measured data becomes the maximum, and corrects a gap of phase. The automatic extracting of a localized rapidly progressing deterioration of track irregularity became possible from the difference of the measured data of which the positions were corrected. Secondly, a predicting technique of track irregularity was developed. This technique predicts the track irregularity stochastically by updating new measurement data by Bayesian inference. Finally, we applied these techniques to the field data, and confirmed the effectiveness of the techniques.