

## **Track Maintenance Using Track Irregularity Anomaly Detection Method Based on Cluster Analysis**

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When a train repeatedly runs on a track, track irregularities, which are the distortion of tracks, gradually increase by wheel loads. The track irregularity is normally inspected periodically to perform a maintenance when a large track irregularity is detected. However, in rare cases, the track irregularity may increase locally and rapidly. To ensure the safety of train operation, preventive maintenance is required to detect the signs of such rapid increase of the irregularity to perform maintenance before it occurs. In this study, to identify a location in advance where large track irregularities are likely to occur, we have developed a mathematical model for the identification by applying the cluster analysis to historical data of track irregularity and maintenance records.