

Improvement of the Accuracy of the Method for Measuring the Axial Force of a Rail Based on the Natural Frequency

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In order to evaluate the axial force of a continuous welded rail quantitatively in a simple manner, a method of measuring the axial force based on the change of the natural frequency has been developed. However, the accuracy of this method is insufficient because of some variations of track conditions. In this study, we extracted factors which influence the measurement accuracy and proposed the error correction method using track finite-element analysis for the purpose of improving accuracy of this measuring method. Furthermore, we measured the natural frequency and axial force of the rail of a real track in order to validate the proposed method.