

**Methods for Estimation of Train Shunt Resistances
Based on the Condition of Wheel-Rail Contact**

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Track circuits based on an electrical shunting principle are widely used to detect the presence of a train within a particular track section. Therefore, it is important to quantitatively estimate the train shunt resistances in order to detect trains exactly. It has been revealed that the resistances can change under the various conditions of wheel-rail contact. In this paper, we propose two methods for their estimation. The one is based on the voltage saturation characteristics which reflect the condition of wheel-rail contact. The other uses an equivalent electric circuit which represents the contact resistances.