

Influence of the Machined Surface on Transient Characteristics of Tangential Force at the Wheel/Rail Interface

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In this paper, in order to investigate the influence of the machined contact surface made by the wheel turning on the transient characteristics of the tangential force of the wheel/rail, the tangential force measurement experiments were carried out using a pair of small cylindrical specimens with/without the machined contact surface. The experimental results show that the coefficient of friction on the contact surface is large due to the repetition of the rolling and sliding friction, the tangential force coefficient in the case of the specimen with the machined contact surface is small compared with that in the case of the specimen without the machined contact surface in the range of the slip ratio of at least less than about 1.0% due to the difference in the contact-patch and the contact properties, and the tangential force coefficient in the case of the specimen with the machined contact surface and that without it are almost the same in the range of the slip ratio of more than about 1.0%. This means that the influence of the machined contact surface on the steady and transient characteristics of the tangential force of the wheel/rail is small if only the ordinary wheel turning is conducted.