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**A MATHEMATICAL MODEL TO STUDY THE STICK-SLIP PHENOMENON DURING
SLIDING AT VARIOUS MACHINING ANGLES**

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ABSTRACT

The directionality of machining marks influences friction and transfer layer formation during sliding contact. Recent experimental investigations showed that this directionality influences the occurrence of stick-slip phenomena and friction coefficient. More specifically, sliding experiments were previously conducted using a pin-on-plate sliding apparatus under dry and boundary lubricated conditions. In the experiments, it was observed that the coefficient of friction and stick-slip phenomenon depend on parameters like machining angle, normal load, roughness of the texture, material pair and lubricant. In the current study, we focus on a mathematical model to predict such experimental observations and their correlations. Based on the results, we discuss the dependency of stick-slip motion on the normal load, grinding angle, roughness, lubrication, and the material pair.