

Dynamics of Contacting Bodies with Impacts, Wear and Heat Generated by Friction

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Abstract

In this work the model of a contact system with heat and wear generated by friction and possible impacts is studied. The methods and mathematical models of such systems applied so far contribute only partially to the description of complex dynamics. First, the analysis of contacting dynamic models omit tribological processes on a contact body surface. Second, the mentioned models do not include either the body inertia or impact phenomena usually appearing within the body clearance. We contribute to the problem by matching both phenomena, which improves modeling of dynamic behavior of contacting bodies. Analysis of both stick-slip and slip-slip motion exhibited by the system is performed (impact-less behavior of this model has been already studied by the authors).