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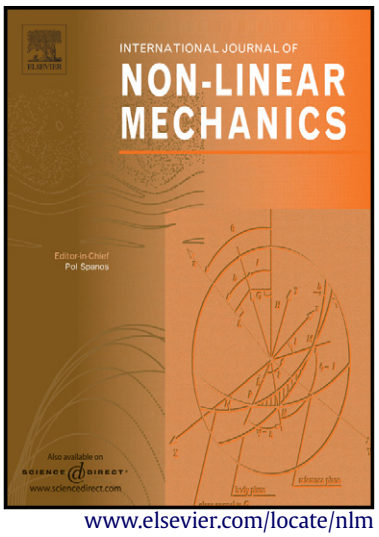

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M. Bazrafshan, H. Ahmadian, H. Jalali

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Modeling the interaction between contact mechanisms in normal and tangential directions

M. Bazrafshan[1], H. Ahmadian[1], H. Jalali[21]

[1]Centre of Excellence in Experimental Solid Mechanics and Dynamics, School of Mechanical Engineering,

Iran University of Science and Technology, Tehran, Iran

[2]Department of Mechanical Engineering, Arak University of Technology, Arak 38135-1177, Iran

Abstract

Contact interface dynamics depends on contact surfaces characteristics and the interaction of these surfaces in normal and tangential directions. In fact the interaction in normal direction affects the behavior in tangential direction through changing the size of the contact area. The level of vibration in normal direction is inversely proportional to the contact stiffness in tangential direction and the friction force. In this paper the effects of micro-vibro-impact developing at the boundary of a nonlinear beam on the parameters of micro-slip mechanism are studied. Also the variation of the contact stiffness in tangential direction is modeled as a function of vibration amplitude level.

Keywords: friction reduction, slip, micro-vibro-impact, contact tangential stiffness

[1] Corresponding author, email: jalali@iust.ac.ir, Phone: +98 861 3670024

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