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Chaotic Response of Non-Reversible Dry Friction Oscillator

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In this paper we show, that the relative acceleration of sliding bodies used in the description of the dry friction model leads to the similarity between system attractor and friction characteristic. In other words, friction characteristics is a certain representation of the system dynamics. On the basis of this property we propose a novel way of dry friction modelling. This approach has more general, universal nature, i.e. it develops a description of friction phenomenon on non-linear systems having irregular attractor but also it reduces to the known models of dry friction in case of regular motion. The proposed model is based on a certain mathematical description of the experimentally determined non-reversible dry friction characteristics, which causes chaotic and irregular motion of the studied system.

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