

NONLINEAR DYNAMIC RESPONSES OF NEW ELECTRO-VIBROIMPACT SYSTEM

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TÓM TẮT:

In this paper experimental study and mathematical modelling of newly designed vibro-impact moling rig are presented. The design is based on electro-mechanical interactions of a conductor with an oscillating magnetic field. The rig consists of a metal bar placed within a solenoid which is connected to an RLC circuit, and an obstacle block positioned nearby. Both the solenoid and the block are attached to a base board. Externally supplied alternating voltage causes the bar to oscillate and hit the block resulting in the forward motion of the base board mimicking a mole penetration through the soil. By varying the excitation voltage and the capacitance in the circuit, a variety of system responses can be obtained.