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On the Duality of Mathematical Models for Problems in Mechanics and in the Theory of Electrical Circuits

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Abstract—Considered in this paper are mathematical models of mechanics together with the theory of electrical circuits, and their similar dynamical structure is revealed. Using basic analogies, a chain of mechanical springs and an equivalent electrical analogue are constructed. Examples of "successful" borrowings are given, when methods of the theory of electrical circuits may be used to solve stabilization problems for a mechanical system formed by a set of interconnected mechanical subsystems.

Keywords: mechanical system, electrical circuit, duality of mechanical and electrical systems, stabilization of interconnected systems.

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