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Friction coefficient estimating in problem of planar motion of a friction-powered robot

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Abstract: The design of the robot, driven by friction against the surface of the support and displacement of internal masses, is considered. The robot has one unbalanced rotor and one flywheel. A mathematical model of its plane-parallel motion is constructed. Friction is modelled using Coulomb's law. Angular accelerations of rotating structural elements are selected as control functions. To implement the forward translational motion of the robot, it is necessary to know the coefficient of friction of the body against the surface of the support. An algorithm for estimating this coefficient is proposed.

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