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ON THE FUNCTIONALITY OF LYAPOUNOV FUNCTIONALS IN COMPARING THE EFFICACY OF TWO SIMPLE MECHANICAL SYSTEMS.

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Abstract

This paper is motivated by the work of Ogbu H.M. and Okoro A.S. (2011) which employed Lyapounov functional to establish normal and faulty working conditions of the spring balance with undamped (i.e frictionless) ordinary differential system of the form $m\ddot{x} + kx = 0$. This work also wants to use Lyapounov functional to show that the spring balance with damped system of the form $m\ddot{x} + D\dot{x} + kx = 0$ is more stable, effective and durable than the spring balance with undamped system. Here, the aim is to create awareness among the business community to go after weighing spring balances with damped systems for a fair deal in transactions concerning buying and selling.

Key Words : *Stability, Lyapounov functional, Trivial solution, Stiffness, Spring balance, Damped system.*

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