

The pair of oscillators coupled by the electromagnetic field

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Abstract: The paper concerns numerical and experimental study of a system consisting of two identical oscillators coupled by the electromagnetic field. A system contains two permanent neodymium magnets hung up on the two vertical springs and vibrating in the hollows of two coils. The system with both, linear and non-linear springs has been considered and studied. The coils are connected in series, what makes the oscillators coupled. The coupling is determined by the currents which are induced by moving magnets in the nearby of coils. Based on the Faraday's law, the coupling variables are velocities of the magnets. Such a system can be easily applicable. One of the potential use in the field of energy harvesting is scavenging the energy from ocean waves. The work consists of modelling, numerical simulation and experimental study of the earlier introduced mathematical model. The results of numerical simulations are confronted with experimental data and taken under discussion.

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