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Existence of periodic solutions of a third-order nonlinear system. (English. Russian original)

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Differ. Equ. 57, No. 10, 1341-1357 (2021); translation from Differ. Uravn. 57, No. 10, 1367-1383 (2021).

Summary: We consider a nonlinear autonomous third-order ODE system depending on numerical parameters and describing the motions of an energy harvester that converts residual thermal energy into electrical energy. For the correct operation of the harvester, it is necessary that this system have a periodic solution; therefore, the problem is to find system parameters for which there exists such a solution. The problem is solved by the small parameter method.

MSC:

34C60 Qualitative investigation and simulation of ordinary differential equation models

78A55 Technical applications of optics and electromagnetic theory

34C25 Periodic solutions to ordinary differential equations

34E10 Perturbations, asymptotics of solutions to ordinary differential equations

Software:

[mpmath](#)

Full Text: [DOI](#)

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