



Chaotic synchronization of vibrations of a coupled mechanical system consist of a plate and beams

J. Awrejcewicz, A.V. Krysko, T.V. Yakovleva, D.S. Zelenchuk, V.A. Krysko

Abstract: In this paper mathematical model of a mechanical system consisting of a plate and either one or two beams is derived. Obtained PDEs are reduced to ODEs, and then studied mainly using the fast Fourier and wavelet transforms. The influence of the excitation amplitude on the vibrational regime of our mechanical object, as well as the beam position versus plate. The following examples are studied: (i) beam is situated in the plate surface ($y=0.5$); (ii) beam is shifted into plate edge with respect to the plate centre ($y=0.33$); (iii) two parallel beams are symmetrically located versus plate centre ($y=0.4$ and $y=0.6$); (iv) two parallel beams are non-symmetrically located versus plate centre ($y=0.2$ and $y=0.6$) are investigated. A few examples of the chaotic synchronizations are illustrated and discussed.

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- ¹⁾ J. Awrejcewicz, Professor: Department of Automation and Biomechanics, Technical University of Łódź, POLAND, 90-924 Lodz, 1/15 Stefanowski St., POLAND (awrejcew@p.lodz.pl).
 - ²⁾ A.V. Krysko, Professor: Saratov State Technical University, Department of Higher Mathematics and Mechanics, 413100 Engels, Saratov region, Ploschad Svobodi 17, RUSSIAN FEDERATION (tak@san.ru), the author gave a presentation at the conference.
 - ³⁾ T.V. Yakovleva, Associate Professor: Saratov State Technical University, Department of Higher Mathematics and Mechanics, 413100 Engels, Saratov region, Ploschad Svobodi 17, RUSSIAN FEDERATION (tak@san.ru).
 - ⁴⁾ D.S. Zelenchuk, Associate Professor: Saratov State Technical University, Department of Higher Mathematics and Mechanics, 413100 Engels, Saratov region, Ploschad Svobodi 17, RUSSIAN FEDERATION (tak@san.ru).
 - ⁵⁾ V.A. Krysko, Ph.D.: Saratov State Technical University, Department of Mathematics and Modeling, 410054 Saratov, Politehnicheskaya 77, RUSSIAN FEDERATION (tak@san.ru).