

Experimental nonlinear localisation in a system of two coupled beams

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Abstract: This study presents results showing experimental nonlinear localisation in a (macro) system of two coupled beams. First a reduced order model of the system is introduced, using the so called STEP method, leading to a two dof model with cubic nonlinearity. This model allows to show that nonlinear localisation is possible through a 1:1 internal resonance mechanism. Moreover, one can show, using Harmonic Balance Method, that the forced localised solution stems from the principal resonance curve through pitchfork bifurcation, and the numerical model allows to compute the amplitude of bifurcation as well as the bifurcated branch. The experimental results are presented and compared to the numerical ones showing very good agreements.

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