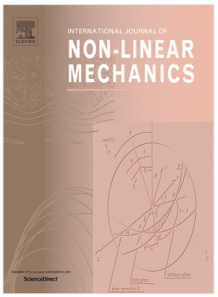
Accepted Manuscript



On the existence of canards in a nonlinear fluid system manifesting oscillatory behaviour

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PII: S0020-7462(17)30370-0
DOI: https://doi.org/10.1016/j.ijnonlinmec.2017.10.006
Reference: NLM 2910

To appear in: *International Journal of Non-Linear Mechanics*

Received date : 16 May 2017
Revised date : 1 September 2017
Accepted date : 9 October 2017

Please cite this article as: H. Fallah, P. Lundberg, M.R. Razvan, On the existence of canards in a nonlinear fluid system manifesting oscillatory behaviour, *International Journal of Non-Linear Mechanics* (2017), https://doi.org/10.1016/j.ijnonlinmec.2017.10.006

On the existence of canards in a nonlinear fluid system manifesting oscillatory behaviour

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Abstract

In an earlier study dealing with a nonlinear fluid oscillator governed by two autonomous ODEs, the solutions were found to display some aberrant characteristics adjacent to the boundaries of the oscillatory regime in parameter space. It was argued that this behaviour indicated the presence of canards. In the present study it is formally proved that this indeed is the case, and some numerical examples illustrating the phenomenon as well as its effects are presented.

Keywords. Slow-Fast Systems; Canard Solutions; Canard-Explosion Phenomenon; Nonlinear Fluid Systems; Bifurcation

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