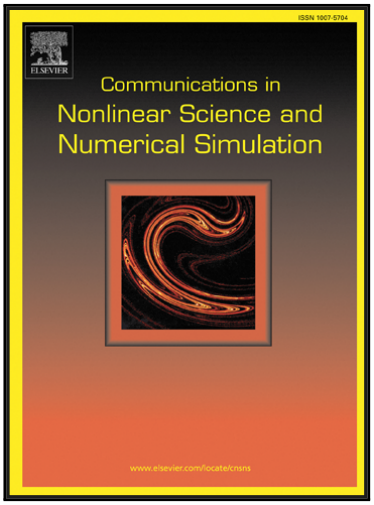

The effect of gas and fluid flows on nonlinear lateral vibrations of rotating drill strings

Lelya Khajiyeva , Askar Kudaibergenov , Askat Kudaibergenov

PII: S1007-5704(17)30430-6
DOI: 10.1016/j.cnsns.2017.12.008
Reference: CNSNS 4399

To appear in: *Communications in Nonlinear Science and Numerical Simulation*

Received date: 3 August 2017
Revised date: 29 November 2017
Accepted date: 6 December 2017

Please cite this article as: Lelya Khajiyeva , Askar Kudaibergenov , Askat Kudaibergenov , The effect of gas and fluid flows on nonlinear lateral vibrations of rotating drill strings, *Communications in Nonlinear Science and Numerical Simulation* (2017), doi: 10.1016/j.cnsns.2017.12.008

Highlights

- Nonlinear mathematical models describing coupled lateral vibrations of a rotating drill string are developed
- The Galerkin approach and the stiffness switching method are utilized to obtain numerical results
- Correct choice of the gas parameters maintains stability of the system and enables to reduce the amplitude of drill string vibrations