Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Dynamic mode decomposition analysis of instability of the flow past rotating sphere MACIEJ SKARYSZ, Warsaw University of Technology, Institute of Aeronautics and Applied Mechanics, Poland, SOPHIE GOUJON-DURAND, JOSE EDUARDO WESFREID, Ecole Superieure de Physique et de Chimie Industrielles de Ville de Paris, PMMH, UMR7636 CNRS ESPCI P6-P7, France — Dynamic mode decomposition (DMD) is an effective method to obtain the description of coherent features of fluid flow generated both by numerical simulations and experimental measurements. Extraction of dynamic modes connected with the frequency created by the method provide essential information and made our understanding of fluid-dynamical process more meaningful. The wake behind rotating sphere for low Reynolds number (lower than 400) was experimentally investigated. Different regimes depending both on rotating rate and Reynolds number appears and was characterized by different multiple frequencies observed in the wake. In this case the DMD analysis was very efficient to expose full spectra and new modes remaining undetectable for other methods.

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Date submitted: 16 Jul 2014 Electronic form version 1.4