

Abstract Submitted  
for the DFD10 Meeting of  
The American Physical Society

**Analysis of the Flapping Dynamics of a Slender Within a Soap-Film Flow Tunnel**<sup>1</sup> ROCCO PORTARO, MOHAMED FAYED, Concordia University, HAMID AIT ABDERRAHMANE, McGill University, HOI DICK NG, Concordia University — A thin slender placed within a two-dimensional parallel laminar flow yields to a complex coupling dynamics between the flapping of the thin fibre and the surrounding fluid flow. In this study, this complex interaction is revisited experimentally using a soap-film flow tunnel as proposed by Zhang et al. (2000) [Nature 408, pp. 835]. The dynamics of the slender and the flow wake are imaged using a high-speed camera and a low pressure sodium lamp for the light source. Image processing technique is used to analyze the flapping of the slender and the ensued flow wake structure. These results are further examined using nonlinear time series and multifractal method. The results are compared with previous experiments and numerical modelling.

<sup>1</sup>This work is supported by the Natural Sciences and Engineering Research Council of Canada (NSERC)

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Date submitted: 27 Jul 2010

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