Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

**The Clapping Book: wind-driven oscillations in a stack of elastic sheets** PETER BUCHAK, PEDRO REIS, Department of Mathematics, Massachusetts Institute of Technology, CHRISTOPHE ELOY, IRPHE, CNRS & Aix-Marseille Universite, JOHN BUSH, Department of Mathematics, Massachusetts Institute of Technology — We present the results of a combined experimental and theoretical investigation of the dynamics of a book clapping in the wind. In our experiments, a steady horizontal air stream blows across an initially horizontal stack of paper, clamped at the downstream end. Pages lift off to form a growing bent stack whose shape is determined by the balance of aerodynamic forces and elastic resistance to bending. As more pages lift off to join the bent stack, the increasing importance of bending rigidity to dynamic pressure eventually causes the book to clap shut, resulting in regular, self-sustained oscillations. We model the bent stack as a thin elastic sheet at equilibrium in a steady two-dimensional flow and combine this quasi-static analysis with a criterion for page lift-off in order to describe this clapping process.

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Date submitted: 30 Jul 2008 Electronic form version 1.4