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The Clapping Book: Wind-Driven Oscillations in a Stack of Elastic Sheets

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Phys. Rev. Lett. **105**, 194301 – Published 5 November 2010



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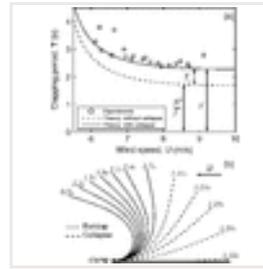
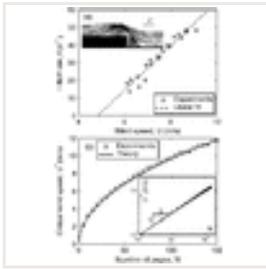
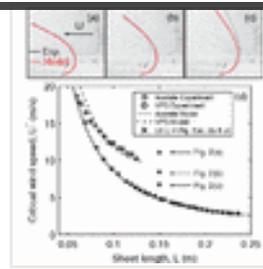
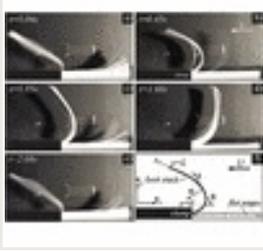
ABSTRACT

We present a hybrid experimental and theoretical study on the oscillatory behavior exhibited by multiple thin sheets under aerodynamic loading. Our *clapping book* consists of a stack of paper, clamped at the downstream end and placed in a wind tunnel with steady flow. As pages lift off, they accumulate onto a bent stack held up by the wind. The book collapses shut once the elasticity and weight of the pages overcome the aerodynamic force; this process repeats

periodically. We develop a theoretical model that predictively describes this periodic clapping process.

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Received 29 June 2010

DOI: <https://doi.org/10.1103/PhysRevLett.105.194301>

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Issue

Vol. 105, Iss. 19 — 5 November 2010

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