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

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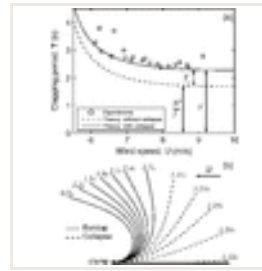
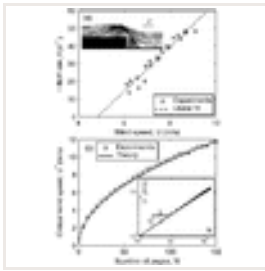
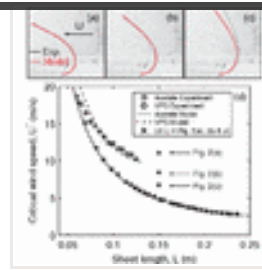
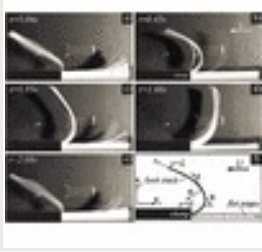
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ABSTRACT

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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