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

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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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High Energy Physics (HEP) papers published after January 1, 2018 in Physical Review Letters, Physical Review C, and Physical Review D are published open access, paid for centrally by SCOAP³. Library subscriptions will be modified accordingly. This arrangement will initially last for two years, up to the end of 2019.
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