

Abstract Submitted  
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**Coupling between a flag and a spring-mass oscillator**<sup>1</sup> EMMANUEL VIROT, XAVIER AMANDOLESE, PASCAL HEMON, LadHyX, Ecole Polytechnique — We address the coupling between a flexible flag and a spring-mass oscillator in the context of energy harvesting. We report a coupling by frequency lock-in leading to resonance conditions over a large range of wind velocities. Large amplitudes of rotation of the flagpole are reported, up to 75 degrees peak-to-peak. We propose to characterize the strength of this coupling with a dimensionless rigidity, which can be considered as the ratio of the flag bending rigidity to the stiffness of the oscillator.

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