

Abstract Submitted
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Kite propulsion: single and multi-kite stability EMMANUEL DU PONTAVICE, Ladhyx, Ecole Polytechnique/PMMH ESPCI, YVES PARLIER, Beyond the sea, DAVID QUÉRÉ, CHRISTOPHE CLANET, Ladhyx, Ecole Polytechnique/PMMH ESPCI — Kite propulsion is one way to harvest wind energy. The typical force is 1 kilo Newton per square meter, which means that with kites in the range 100 to 1000 square meters, one is able to propel ships from the trawler to the tanker. The stability of the kite with no active control is however an issue that needs to be addressed in order to develop viable systems. Under certain conditions, kites tend to engage into large oscillations and eventually crash. Through wind tunnel experiments and basic mechanic modeling, we try to understand (and avoid) this instability. In order to increase the traction of kite propulsion devices, one needs to increase their surface. One way is to superpose a large number of kites. It appears that these chains of kites are much more stable than single kites. A simple physical model is developed to understand this behavior.

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