

Abstract Submitted
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The flow around the node to anti-node transition of an oscillating flexible cylinder¹ FRANCISCO HUERA-HUARTE², ZAFAR BANGASH³, Universitat Rovira i Virgili — The vortex dynamics in the wake of cylinders is a topic of interest, for its implications in engineering since the forties. Most of the work has been done with stationary cylinders or with oscillating rigid cylinders when they are elastically mounted. If the cylinders are flexible, not only the structural dynamics become more complex, but the fluid dynamics around the cylinder are much more complicated. We study the flow around a flexible cylinder when oscillating in its first or second structural mode. An experimental set-up allows producing forced oscillations on the model, in a way that mode number, oscillating frequency and amplitude can be controlled. Experiments were conducted in a motorised towing tank, for a wide range of towing speeds, frequencies and amplitudes. Digital Particle Image Velocimetry (DPIV) was used to quantify the flow and to investigate the flow structures and vortex modes around the cylinder. The interest was given to the extreme amplitude regions and to the node to anti-node transitional regions.

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