

Abstract Submitted
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Two-Dimensional Vortex-Induced Vibration of a Curved Cylinder¹ LAUREN BOUCHARD, DANIEL CARLSON, BANAFSHEH SEYED-AGHAZADEH, YAHYA MODARRES-SADEGHI, Univ of Mass - Amherst — We study vortex-induced vibration of a flexibly-mounted rigid curved cylinder placed in flow either in the concave or the convex orientation. The ratio of the structural natural frequencies in the inline and crossflow directions was varied from 1 to 2 in steps of 0.2. Counterclockwise figure eights were observed in the convex orientation when the structural natural frequency ratio was 2. For all the other frequency ratios tested (1, 1.2, 1.4, 1.6 and 1.8) the motion was mainly in the crossflow direction, with very small inline amplitudes. This was also the case for the cylinder in the concave orientation with a frequency ratio of 2. Overall the crossflow amplitudes were larger for the 2D case compared with the crossflow amplitudes of the same cylinder with only one degree of freedom in the crossflow direction.

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