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**Experimental study on flow-induced vibration of tandem flexible cylinders at varying angles of inclination** GIANCARLOS CASTRO CASTRO, Miami University, BANAFSHEH SEYED-AGHAZADEH, University of Massachusetts, Dartmouth — Flow-induced vibration (FIV) response of a highly flexible inclined circular cylinder placed in the wake of a stationary cylinder is studied experimentally. The flexible cylinder is tension-dominated with an aspect ratio of 47 and a high mass ratio of 120. The cylinder was held fixed at both ends and placed in the test-section of a subsonic wind tunnel. The angles of inclination were varied from 0 to 45 with increments of 15. The inclined flexible cylinder lied in the wake of an upstream stationary cylinder of equal diameter and inclination. The dynamic response of the downstream flexible cylinder is studied for center-to-center spacing range from 3 to 7 times the cylinder diameter, in the reduced velocity range of  $U^*=3.6-48.5$  and the Reynolds number range of  $Re = 260-3750$ . Influence of inclination and cylinder spacing is investigated through studying the dynamic response of the cylinder in terms of the excited structural modes, amplitudes and frequencies of oscillations and transition between modes. Different values observed for the onset of oscillations and modal weight contributions explains that the FIV response of the system is different from that of a completely vertical cylinder for all angles of inclination larger than 15°. Dynamic response of the flexible cylinder was found to be always under the influence of the upstream one, even for large cylinder spacing of 7d.

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