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Control of a Sphere Wake by Sting Interference and Localized Disturbances ADAM NORMAN, JOSHUA FEINGOLD, BEVERLEY MCKEON, California Institute of Technology — Vortex shedding in the wake of a sphere that is simply supported using a streamwise-aligned cylindrical sting is investigated at sub-critical Reynolds numbers of order 10^4 . The effect of the sting size on the Kármán vortex shedding and Kelvin-Helmholtz shear layer instability is examined. The blockage of the sting will be compared with the two-dimensional analog of the splitter plate introduced into a cylinder wake. The controlling mechanism of a small stud placed upstream of the average azimuthal separation angle is also explored. High speed stereo particle image velocimetry is used to understand the average and temporal aspects of the sting and stud controlling mechanisms, and Lagrangian Coherent Structure (LCS) analysis is implemented to probe the wake structure. This research is a first step towards active control of a sphere wake using surface actuation.

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