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Simulation of a 2D flow past a flexible fibre tethered at its center point: vortex shedding LUODING ZHU, Indiana University-Purdue University, Indianapolis — Vortex shedding from an object immersed in a flowing fluid is an important and interesting topic and has been extensively studied experimentally, analytically and computationally. Most of the work focused on vortex shedding from a rigid body; for instance, a circular cylinder [1], a sphere [2] or an inclined flat plate [3]. Here we report our simulation of vortex shedding from the two free ends of a flexible fibre with its center point tethered (otherwise unrestricted) in a two-dimensional flowing viscous incompressible fluid by the immersed boundary method [4]. The motivation of our work is a laboratory experiment reported in [5]. The Reynold numbers range from 2000 to $40,000$ in the experiment and the authors focused on drag reduction caused by self-similar bending of the fibre. Our work concentrates on the vortex shedding at lower Reynolds numbers ($12.5 - 375$), investigating the influences of inflow speed, fibre length and fibre bending rigidity on the vortex shedding.

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