

Abstract Submitted
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Interfering with the wake of cylinder by flexible filaments ALFREDO PINELLI, MOHAMMAD OMIDYEGANEH, City University London — This work is the very first attempt to understand and optimize the configuration of flexible filaments placed on the lee side of a bluff body to manipulate flow transitions and bifurcations. It is found that the presence of a sparse set of flexible filaments on the lee side of a cylinder can interfere with the 2D-3D transition process resulting in elongation of recirculation bubble, inhibition of higher order unstable modes, and narrowing the global energy content about a particular shedding frequency. Filaments become effective when spacing between them is smaller than the dominant unstable mode at each particular Reynolds number, i.e. A and B modes. In another study, by a particular arrangement the reconfigured filaments can reduce pressure fluctuations in the wake and drop lift fluctuations significantly ($\simeq 80\%$).

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