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Experimental sensitivity analysis of the global mode frequency of cylindrical bodies with blunt trailing edges at large Re OLIVIER CADOT, ENSTA-ParisTech, MATHIEU GRANDEMANGE, ENSTA-ParisTech/ PSA Peugeot Citroën, VLADIMIR PAREZANOVIC, ENSTA-ParisTech, ENSTA TEAM —
The global mode frequency modification of a square and a "D" shape cylinders due to the insertion in the flow of a small local and steady disturbance is investigated experimentally at Re=20000. Sensitivity maps are built by measuring the global mode frequency of the flow for many positions of the disturbance around the cylinder. Sensitive regions of either large or low frequencies are identified. It is shown that their spatial structures become independent on the size of the disturbance if this size is smaller to any boundary layers in the flow. In that case, the frequency changes are mostly interpreted by the ability of the disturbance to modify the mean flow through local vorticity injection or change in the local turbulent properties. Theoretical predictions of these sensitive regions from Meliga et al. will be presented in another abstract.

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