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**The influence of shear layer thickness in the stability of confined 2D wakes** LUCA BIANCOFIORE, Univ Nice - Sophia Antipolis, FRANÇOIS GALLAIRE, LFMI-EPFL, RICHARD PASQUETTI, Univ Nice - Sophia Antipolis — The goal of this communication is to understand how the presence of a finite shear layer thickness in a confined wake modifies the stability properties of the flow. Two different approaches are used to illustrate its influence: a local stability analysis of a family of wakes introduced by Monkewitz (1988)[1] and a nonlinear global analysis on several confined spatially evolving 2D wakes conducted by means of a spectral DNS code. Concerning the spatio-temporal analysis, we show that there exists, for any given confinement, an optimal value of the shear layer thickness for which the absolute instability is maximal. Using the DNS to compute the base flow, the local streamwise velocity distributions as well as the local value of shear layer thickness can be extracted as a function of the streamwise direction. The deduced local stability predictions are compared with the nonlinear stability properties of the flow for two values of the Reynolds number. Furthermore, the Strouhal numbers obtained from the DNS are compared to those predicted by the local analysis.

[1] *Phys. Fluids*, **31**, 999-1006

Luca Biancofiore
Univ Nice - Sophia Antipolis

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