# Active Control of Vortex Shedding Behind Bluff Bodies

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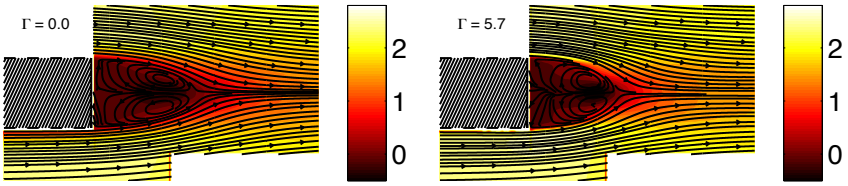
Funding: KTH

The bluff body geometry is found in many engineering designs, such as on most vehicles, bridges and skyscrapers, but is susceptible to an absolute instability when subjected to a simple main stream. This instability manifests itself in terms of shed vortices from alternating side of the body with a fixed frequency for a given main stream, which can lead to structural vibrations, an increased aerodynamic drag and acoustic noise generation.

In this project the aim is to experimentally study the instability of wakes behind bluff bodies from a fundamental research point of view, both for the natural case as well as with various wake flow control methods applied. This is realized in an experimental setup specially designed to perform parameter variations, which are most often not possible in usually fixed experimental geometries. The main part of this setup is a rectangular-based forebody with permeable surfaces on both sides, enabling suction or blowing of air through the surfaces. This gives the unique possibility to vary the thickness and the shape of the boundary layer profiles along the forebody, while keeping the free stream velocity constant. In the laminar case the boundary layer asymptotes towards the well-known asymptotic suction boundary layer (ASBL), which has a constant thickness independent of the free stream velocity.




The effects are quantified by using different techniques such as hot-wire anemometry, differential pressure measurements with pressure taps and high-speed Particle Image Velocimetry of which an example is shown in the figure.