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NATURAL CONVECTIVE FLOW ANALYSIS IN VERTICAL CHANNEL

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ABSTRACT

Experiments were carried out using an experimental vertical uniformly heated channel Fig. 1 in order to investigate the impact of controlled perturbations on the natural convective flow. To that extent, acoustic perturbations are introduced using a speaker. Temperature and velocity measurements are carried out using thermocouples and Particle Image Velocimetry method. The introduced perturbation has an impact on the averaged velocity as well as on inlet fluctuations Fig. 2. Inlet fluctuations features are analysed by means of Proper Orthogonal Decomposition method.

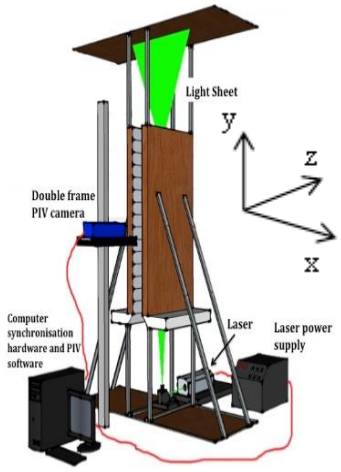

Figure 1. Scheme of the experimental device and the PIV system

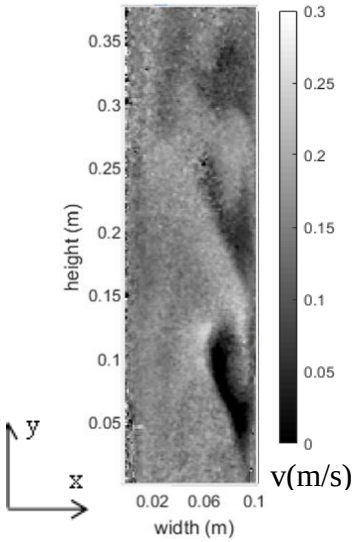

Figure 2. Instabilities and traveling waves