

Abstract Submitted
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Experimental study of instability patterns in a non- uniformly heated Rayleigh-Bénard-Poiseuille cell¹ EMERIC GRANDJEAN, NAVID BORHANI, PETER A. MONKEWITZ, Swiss Federal Inst. of Technology Lausanne (EPFL) — The effect of non-uniform heating on the convective roll patterns in a Rayleigh-Bénard-Poiseuille system of large transverse aspect ratio has been studied experimentally. The influence of the lateral walls has been further reduced by keeping a strip adjacent to each side wall well below critical, thus providing a “sponge region” for the roll patterns. The study consisted of three parts: Firstly, the transition between the convective and the absolute instability of the transverse rolls was determined with uniform heating of the channel bottom. Secondly, the impulse response of the uniformly heated system was determined by applying a spatially localized thermal pulse to a uniform sub-critical base flow. Thirdly, the effect of spatially non-uniform, but temporally steady heating upon the roll dynamics was studied. These experimental results will be compared to the theoretically expected response of the system [JFM, **502**, 175 (2004)].

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