# Effective transport coefficients in Rayleigh-Bénard convection

Martin Caelen*[1], François Petrelis[1], and Stéphan Fauve[1]

[1]Laboratoire de Physique de l'École normale supérieure – Ecole Normale Supérieure de Paris - ENS Paris, Université PSL, CNRS, Sorbonne Université, Université Paris Cité – France

**Abstract**

We experimentally study Rayleigh-Bénard convection in the presence of an externally forced (Roberts-like) cellular flow. This forcing is obtained by placing the convective cell, filled with liquid metal (Galinstan), against an array of permanent magnets, and by injecting a controlled lateral electric current through the liquid metal. Studying the heat transport properties of the flow below and close to the Rayleigh-Bénard onset of instability, we propose an experimental measurement of the effective transport coefficients (thermal diffusivity and viscosity) as functions of the Péclet number of the forced cellular flow.

*Speaker