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Lagrangian tracking of an instrumented particule in Rayleigh-Benard flow FANNY SEYCHELLES, ENS Lyon, XAVIER RIEDINGER, EXETER, JULIEN SALORT, ELEONORE RUSAOUEN, ENS Lyon, MATTHIEU GIBERT, LEGI, YOANN GASTEUIL, OLIVIER LIOT, BERNARD CASTAING, FRANCESCA CHILLA, ENS Lyon — Thermal convection is present in different systems from astrophysical to geophysical flows. Most experiments and numerical studies are carried from eulerian point of view. The heat transfer from a local perspective is not well understood. Lagrangian description could provide the missing insights on the local mixing and transport mechanisms in thermal convection. We present here a lagrangian measurement in a Rayleigh Bénard convection. To be more precise, we have conceived a sphere particle with embarked thermometers and radio emitter. Our experimental setup is a rectangular vessel with height H=40 cm and section 40 cm x 10 cm filled with water. The walls are made of polymethylmetacrylate, the top plate is cooled by controlled thermal bath, and the bottom plate is heated by electrical resistance. Using a camera for optical tracking, we obtain at the same time the position and temperature measurement of the particle. We present here the results of a new sensor on statistics of temperature, velocity and heat transport in an original Rayleigh Benard convection, where the top plate is smooth and the bottom plate is rough.

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