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Laboratory Scale Simulating of Strange Spiral Plumes in Fluid with Hight Ptandtl Number ALBERT SHARIFULIN, Perm State Technical University, ANATOLY POLUDNITSIN, Perm State University — We experimentally investigated the appearance of a plumes from local hot spot and study its interaction with cellular flow in closed cavity filled by silicon oil with Prandtl number $\mathrm{Pr} \approx 2 \cdot 10^3$. Convective plume generated by a local heat source, located on the top of the small rubber cylinder, which is located in the center of the bottom of the rectangular cell. To simulate the hot-spot green laser has been used. Roll-type large-scale convective flow was generated by heating of the one vertical sides of cavity. Influence of power of hot point on the shape of plume has been investigated. It is shown that the presence of cellular convective motion may lead to the formation of a strange spiral convective plume. This plume looks like Archimedes spiral replaced on vertical plane. Physical mechanism of the formation of strange spiral plume and application of obtained results for mantle convection problems are discussed.

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