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Tumbling rate of anisotropic particles in turbulent convection LINFENG JIANG, CHAO SUN, Tsinghua University, 100084 Beijing, China, ENRICO CALZAVARINI, Universite de Lille, F 59000 Lille, France — The rotational dynamics of small anisotropic material particles (*e.g.*fibers or disks) in turbulent flows has been the focus of a series of recent studies. Experiments as well as numerical simulations have highlighted their complex behavior, which is inherited from the non-trivial dynamics of the velocity gradient tensor along the particle trajectories. We report the investigation of orientation dynamics of neutrally buoyant anisotropic particles as they are advected in the Rayleigh-Benard convection by means of experiments and simulations. Compared with the homogeneous isotropic turbulence, the global rotation rate square for particles reveals a similar distribution whereas the averaged value as a function of aspect ratio shows a significant decrease. We propose a simple model to qualitatively understand the phenomenon. It is found that the large scale circulation significantly changes the flow topology into a bidimensional state so as to be responsible for the rotation rate variation.

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