

Abstract Submitted  
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**Re-orientations of the large-scale circulation in turbulent Rayleigh-Bénard convection**<sup>1</sup> ERIC BROWN, ALEXEI NIKOLAENKO, GUENTER AHLERS, UC Santa Barbara — We present measurements of the orientation  $\theta_0(t)$  of the large-scale circulation (LSC) of turbulent Rayleigh-Bénard convection in cylindrical cells of aspect ratio 1. The orientation undergoes irregular reorientations. It contains two types of reorientation events to be called rotation and cessation. Rotation through angles  $\Delta\theta$  has a monotonically decreasing probability distribution  $p(|\Delta\theta|) \propto |\Delta\theta|^{-\gamma}$  with  $\gamma \simeq 4$  reminiscent of heavy-tail distributions in many other systems. Cessations involve a brief vanishing of the LSC, followed by a new spontaneous re-organization of the LSC with a randomly chosen new orientation. Thus the probability distribution for cessation is uniform:  $p(|\Delta\theta|) = 1/\pi$ . Both rotations and cessations have Poissonian statistics in time.

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