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Organized flow structures is turbulent thermal convection[1] CHAO SUN, KE-QING XIA, The Chinese University of Hong Kong, PENGER TONG, The Hong Kong University of Science and Technology — The technique of particle image velocimetry is used to study the velocity field in turbulent Rayleigh-Bénard convection in an aspect-ratio-1 cylindrical cell filled with water. By measuring the 2D velocity vector map in different cross-sections of the cell, we investigate the 3D flow structures and dynamics of the synchronized plume motions. The experiment reveals how thermal plumes synchronize their emissions and organize their motions spatially between the top and bottom plates, which generate highly coherent velocity oscillations in the entire convection box.

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