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**Temperature Oscillations and Flow Dynamics in Turbulent Thermal Convection**[1]

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We report an experimental study of three-dimensional structure of the low-frequency temperature oscillations in a cylindrical Rayleigh-Bénard (RB) convection cell of aspect ratio one. It is found that the hot and cold thermal plumes are not emitted periodically nor alternatively, but continuously and randomly, from the top and bottom plates. We further found that the oscillation of the temperature field does not originate from boundary layers, but rather is a result of the horizontal motion of the hot ascending and cold descending fluids being modulated by the twisting oscillation near the top and bottom plates and the off-center oscillation in the bulk flow field. Evidence will also be presented to show that the off-center oscillation in the bulk flow field is a manifestation of the twisting motion of fluid near the top and bottom plates. In collaboration with Heng-Dong Xi, Quan Zhou, and Sheng-Qi Zhou, The Chinese University of Hong Kong.

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