

Abstract Submitted  
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**Temperature oscillation and the sloshing motion of the large-scale circulation in turbulent Rayleigh-Bénard convection**<sup>1</sup> HENG-DONG XI, XIN CHEN, Northwestern Polytechnical University, KE-QING XIA, The Chinese University of Hong Kong — We report an experimental study of the temperature oscillation and the sloshing motion of the large-scale circulation (LSC) in turbulent Rayleigh-Bénard convection in water. Temperature measurements were made in aspect ratio one cylindrical cell by probes put in fluid and embedded in the sidewall simultaneously, and located at the 1/4, 1/2 and 3/4 heights of the convection cell. The results show that the temperature measured in fluid contains information of both the LSC and the signature of the hot and cold plumes, while the temperature measured in sidewall only contains information of the LSC. It is found that the sloshing motion of the LSC can be measured by both the temperatures in fluid and in sidewall. We also studied the effect of cell tilting on the temperature oscillation and sloshing motion of the LSC. It is found that both the amplitude and the frequency of the temperature oscillation (and the sloshing motion) increase when the tilt angle increases, while the off-center distance of the sloshing motion of the LSC remains unchanged.

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