

Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

Morphological Evolution of Thermal Plumes in Turbulent Convection¹ QUAN ZHOU, CHAO SUN, KE-QING XIA, The Chinese University — An experimental study of the morphological evolution of thermal plumes in turbulent thermal convection is presented. Both visualization and quantitative velocity and temperature measurement techniques are used in the study. When viewed from the top the plumes look sheet-like and their lengths have an approximate log-normal distribution. When the sheet-like plumes curl-up or cluster together to form mushroom-like objects strong vertical vorticity fluctuations are generated. The fluctuating vorticity is found to have an exponential distribution and correlates strongly with temperature fluctuations. Moreover, the rms values of vorticity and temperature are found to exhibit similar scaling behavior with Ra.

¹Work supported by the Research Grants Council of Hong Kong SAR (Project No. CUHK 403705)

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Date submitted: 03 Aug 2006

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