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An experimental study of kicked thermal turbulence[1] KE-QING XIA, XIAOLI JIN, The Chinese University of Hong Kong — We present an experimental study of turbulent thermal convection when the input energy that drives the turbulent flow is in the form of periodical pulses. It is found that in this "kicked" thermal turbulence the heat transfer efficiency is enhanced compared to the case of constant energy input. It is further found that the shape the input pulse has a strong effect on heat transport enhancement, spiky pulses produce larger enhancement of the Nusselt number Nu than tubby pulses of the same energy and that for sinusoidally modulated heating input no Nu enhancement is found. For appropriate ranges of the kicking strength $A$and kicking frequency f, the Rayleigh number $Ra(t)$ is found to reach a saturation level that scales as the product of (Af), thus confirming the mean-field theory for kicked turbulence proposed by Lohse.

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