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**Magnetoconvection and universality of heat transport enhancement<sup>1</sup>** ZI LI LIM, KAI LEONG CHONG, KE-QING XIA, Department of Physics, The Chinese University of Hong Kong — We numerically investigate how a vertical external magnetic field affects the convective flow in a Rayleigh-Benard turbulent convection. We observed an enhancement of heat transport under certain range of the Hartmann number  $Ha$  that characterizes the strength of the stabilizing Lorentz force. Heat transport enhancement caused by a stabilizing force is also observed in several other systems [1]. We find that the heat transport behaviour in the present system may also be understood in terms of an interplay between the stabilizing and destabilizing forces of the system and the observed optimum heat transport enhancement can be explained by an optimal coupling between thermal boundary layer and the momentum boundary layer. Therefore, the observed behaviour in magnetoconvection appears to belong to the same universality class of stabilizing-destabilizing (SD) flows reported recently [1]. [1] K. L. Chong, et al. Confined Rayleigh-Benard, Rotating Rayleigh-Benard, and Double Diffusive Convection: A unifying view on turbulent transport enhancement through coherent structure manipulation, *Phys. Rev. Lett.* (in press).

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