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**xiaoming wang\*** ([wxm@math.fsu.edu](mailto:wxm@math.fsu.edu)), Department of Mathematics, Florida State University, Tallahassee, FL 32306. *Large Prandtl Number Behavior of the Boussinesq System of Rayleigh-Benard Convection.*

We consider large Prandtl number behavior of the Boussinesq system for Rayleigh-Bénard convection at large time. We first show that the global attractors of the Boussinesq system converge to that of the infinite Prandtl number model. This is accomplished via a generalization of upper semi-continuity property with respect to parameters of dissipative dynamical systems to the case of singular limit of two time scale problems of relaxation type. We then show that stationary statistical properties (in terms of invariant measures) of the Boussinesq system converge to that of the infinite Prandtl number model. In particular, we derive a new upper bound on heat transport in the vertical direction (the Nusselt number) for the Boussinesq system. The new upper bound agrees with the recent physically optimal upper bound on the infinite Prandtl number model at large Prandtl number. (Received September 08, 2006)