Abstract Submitted for the DFD17 Meeting of The American Physical Society

Energy conservation in incompressible convection TAYLER QUIST, EVAN H. ANDERS, BENJAMIN P. BROWN, Dept. Astrophysical Planetary Sciences, University of Colorado – Boulder, Boulder, CO 80309, USA, KEATON J. BURNS, Dept. Physics, Massachusetts Institute of Technology, Cambridge, MA 02139, USA, DANIEL LECOANET, Princeton Center for Theoretical Science, Princeton University, Princeton, NJ 08544, USA, JEFFREY S. OISHI, Dept. Physics Astronomy, Bates College, Lewiston, ME 04240, USA, GEOFFREY M. VASIL, School of Mathematics Statistics, University of Sydney, NSW 2006, Australia — In classic Rayleigh-Bénard convection, energy is not conserved. Here we study a set of incompressible equations that do conserve energy when thermal diffusion is present. Using the Dedalus pseudospectral framework, we study heat transport by convection in simulations of incompressible but energy-conserving equations. We compare heat transport properties to classic Rayleigh-Bénard convection.

> Tayler Quist Dept. Astrophysical Planetary Sciences, Univ. of Colorado - Boulder

Date submitted: 01 Aug 2017

Electronic form version 1.4