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Hydrodynamic stability in the presence of a stochastic source: convection as a case study JARED WHITEHEAD, Brigham Young University, JURAJ FOLDES, University of Virginia, NATHAN GLATT-HOLTZ, Tulane University, GEORDIE RICHARDS, Utah State University — We quantify the stability of a conductive state in Rayleigh-Benard convection when the fluid is driven not only by an enforced temperature gradient, but also by a mean zero stochastic (in time) internal heat source, a modeled system applicable to situations such as convection in stars, nuclear reactors, and the earth's mantle. We explore the effects of such a mean zero forcing on the onset of convection. The methods applied to the convection problem here, are applicable to any other question of hydrodynamic stability where a stochastic forcing is present.

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