

## **Stochastic Models for Turbulent Convection**

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Buoyancy driven convection plays a fundamental role in diverse physical settings: from cloud formation to large scale oceanic and atmospheric circulation processes to the internal dynamics of planets and stars. Typically, such fluid systems are driven by heat fluxes acting both through boundaries (i.e. heating from below) and in the bulk (i.e. internal 'volumetric' heating sources) both of which can have an essentially stochastic nature. In this talk I will discuss some recent mathematical developments concerning ergodicity, singular parameter limits and the onset of instability in the stochastic Boussinesq and Magnetohydrodynamics equations.