Contribution ID: **75** Type: **not specified**

Stratified and multiphase turbulence in the intracluster medium

Tuesday, 16 August 2022 14:10 (25 minutes)

The intracluster medium (ICM) is stratified so Kolmogorov's picture of isotropic/homogeneous turbulence needs to be modified. Similarly, cool cores show multiphase gas with cold/dense clouds embedded in the diffuse hot ICM. I shall present results from idealized stratified turbulence simulations and idealized multiphase periodic box simulations with heating and cooling. I shall present common diagnostics such as structure functions, power spectra, and the scaling between rms density, pressure and turbulent Mach number. The pressure fluctuations, in contrast to density fluctuations, are a much better indicator of the turbulence Mach number. I shall make comparisons with cosmological simulations and discuss observational implications. (This work is mostly based on the PhD thesis of Rajsekhar Mohapatra)

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Session Classification: Tuesday afternoon: Thermal instability & multiphase ICM