Linear Vlasov theory of a magnetized, thermally stratified atmosphere

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- Weakly collisional, thermally stratified plasmas (e.g., ICM) were shown to be convectively unstable to the magnetothermal instability (MTI) by Balbus (2000, 2001) and Kunz (2011) using linear Braginskii MHD.
- Kinetic counterpart of MTI (kMTI) exists in collisionless plasma but heat is transported by field-aligned particle streaming rather than collisions.
- New instability at sub-ion-Larmor scale (eMTI) driven by electron temperature gradient with growth rate faster than the long-wavelength kinetic MTI. This implies that the large-scale MTI will likely be dependent upon the saturation of the eMTI.