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The Effects of Accretion History on the Cluster Temperature Profile and Cosmological Observables

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We have recently shown using a simple hydrostatic prescription and accretion histories from cosmological simulations that for a group or cluster of a given mass that there is a scatter of temperature and pressure profiles. In particular, we find that for almost every system, even in the presence of conduction and convection, that the temperature decreases outwards with a range of scatter about the mean profile. I will quantify this range of temperature profiles and explain the phenomenology as well as potential for non-thermal pressure support. I will also discuss the effects of this temperature and pressure variation on X-Ray and SZ measurements on both the individual cluster level how it translates into an uncertainty in mass for a given SZ signal. Finally, I will quantify what this implies for cosmological parameter estimation and uncertainty in parameters like sigma-8.

Author: Dr PARRISH, Ian (Canadian Institute for Theoretical Astrophysics)

Presenter: Dr PARRISH, Ian (Canadian Institute for Theoretical Astrophysics)

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