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A comparison of the tSZ properties in the Horizon and Magneticum suite of hydrodynamical simulations

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The distribution of matter in the Universe is a powerful probe of cosmology. Measuring the efficiency with which gravity produces clusters against expanding Universe is the key to understanding, e.g. the equation of state of dark energy. Numerous projects aim at measuring the matter distribution across time in the Universe but no observable gives the perfect figure of this distribution (because of instrumental limitation, astrophysical limitation, or because they probe different redshifts). Cross-correlation of different probes is a powerful way to lift these limitations. My work focuses on the construction of a robust halo model for the thermal Sunyaev-Zeldovich power spectrum (one such tracer of the LSS) and to cross-correlate it with different probes of the distribution of matter (lensing, CMB lensing, galaxy count, ...). To do so, I work with an analytical halo model of this power spectrum and I measure different profiles and power spectrums in the Horizon and Magneticum suite of hydrodynamical simulations to compare both and to test hypotheses of the model, such as the pressure profiles in halos and their link with feedback. In this talk, I will present and comment my results on these comparisons.

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