ID contributo: **69** Tipo: **non specificato**

Constraining cosmological parameters and hydrostatic mass bias with the gas mass fraction in galaxy clusters

martedì 29 giugno 2021 15:10 (20 minuti)

I will present my work on the use of the gas mass fraction in galaxy clusters as a cosmological probe as well as a probe for baryonic effects in these systems.
Using X-ray follow-up observations of galaxy clusters, for instance those of the *Planck* Early SZ (ESZ) sample which has been observed with *Chandra* and XMM-*Newton*, it is possible to constrain the universal baryon fraction Ω_b/Ω_m, as well as other parameters like the matter density Ω_m, the Hubble parameter h or the Equation of State of Dark Energy w.

The gas mass fraction in clusters is also sensitive to baryonic effects that need to be taken into account, and that translate into nuisance parameters. Two of them are the depletion factor Υ, describing how baryons are depleted in clusters with respect to the universal gas fraction, and the hydrostatic mass bias $B = 1 - b$, expressing the fact that the mass is deduced from X-ray observations under the hypothesis of hydrostatic equilibrium.

I will show my preliminary results, obtained using *Planck* ESZ clusters, on both cosmological and cluster parameters.
I will notably discuss the investigation on a possible redshift dependence of the mass bias, which is considered to be non-existent in hydrodynamic simulations based on Λ-CDM, and compare my results with other studies.

Autore principale: WICKER, Raphaël (IAS)

Coautore: DOUSPIS, Marian (IAS); AGHANIM, Nabila (IAS)

Relatore: WICKER, Raphaël (IAS)