



Contribution ID: 58

Type: not specified

## Multi-probe analysis of the galaxy cluster CLJ1227: unveiling systematics in mass estimation

*Monday, 28 June 2021 10:15 (20 minutes)*

We present a multi-probe analysis of the well known galaxy cluster CLJ1227 as a proof of concept for multi-wavelength studies within the NIKA2 Sunyaev-Zeldovich Large Program (LPSZ). CLJ1227 is a massive and high redshift cluster that has already been observed at several wavelengths.

A joint analysis of the thermal SZ (tSZ) effect at millimeter wavelength with the NIKA2 camera and in X-ray with XMM-Newton satellite permits the reconstruction of the cluster's thermodynamical properties and mass in hydrostatic equilibrium hypothesis. The tSZ results are compared to previous studies on CLJ1227 to quantify possible systematic effects in the data or induced by the data processing.

Using the optical CLASH observations we obtain estimates of the lensing mass profile, which can be compared to the hydrostatic mass profiles derived from the tSZ and X-ray analysis. From this we are able to test the hydrostatic equilibrium hypothesis in the cluster. Furthermore, we derive an estimation of the gas mass fraction for the cluster.

In addition, using interferometric NOEMA observations at 70 GHz we study the cluster core in detail. Finally, from radio data we study contributions from non-thermal pressure.

This multi-probe analysis allows us to better understand the dynamical state of such a cluster, which is both spherically symmetric and disturbed at the cluster core.

**Primary author:** MUÑOZ ECHEVERRÍA, Miren (LPSC)

**Presenter:** MUÑOZ ECHEVERRÍA, Miren (LPSC)