Cluster cosmology with NIKA2
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"As the largest gravitationally bound objects in the Universe, galaxy clusters are key tools to study large-scale structure formation processes and to constrain cosmological models. These studies, however, require a precise characterization of cosmological tools such as a mass-observable scaling relation and a mean electronic pressure profile. Systematic effects, in particular at high redshift, have an impact on these tools and are currently the main limitation of cluster-based cosmology. NIKA2, a millimeter camera installed at the IRAM 30-m telescope is a major experiment to extend our understanding of galaxy clusters. Combining sub-arcminute (17.6'' at 150 GHz) angular resolution and a 6.5 arcmin diameter field of view, NIKA2 can resolve and map the Sunyaev-Zel'dovich (SZ) effect towards clusters up to high redshifts. Combined with X-ray data from XMM-Newton satellite, we can infer with high precision the thermodynamical properties and the hydrostatic masses of such objects within the NIKA2 SZ Large Program (LPSZ), which covers a representative sample of about 40 galaxy clusters at $0.5<z<0.9$.
In this talk I will present the first characterization of a sub-sample of the LPSZ and discuss the methodology to measure the mean pressure profile."