ID de Contribution: **125** Type: **Poster**

HypKID (Hyperspectral Kinetic Inductance Detectors) for on-chip line intensity mapping

Millimeter-wave observations provide crucial information for cosmology and for probing the large-scale structure of the Universe. In particular, line intensity mapping of specific emission lines (such as CII or CO), depending on the red-shift, offers unique insight into cosmic expansion. We are developing a hyper-spectral on-chip device designed to scan wide fields of view in three dimensions.
The objective is to simplify the architecture by removing the pre-selecting feed-horns used in previous designs, thereby achieving the full angular resolution of the single-dish telescope. A prototype is currently under development for the 220–240 GHz band (targeting the CO line), with a moderate spectral resolution of $R = \lambda/\Delta\lambda = 100–1000$. For each channel, incoming radiation is absorbed by a planar rectangular split-ring resonator (RSRR) patterned in superconducting Niobium. Each resonator is capacitively coupled to an Aluminum Kinetic Inductance Detector (KID), which measures the absorbed signal through the induced resonance frequency shift. The device is fabricated with two photo-lithography steps on the front, with a microfabricated backshort to optimize coupling. In addition, the design is polarization-sensitive, opening the possibility for wide-field, i.e. fast mapping, spectro-polarimetric observations at moderate resolution.

Title

Topic

Auteur: M. PRELE, Emile (Institut Néel)

Orateur: M. PRELE, Emile (Institut Néel)