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An overview of the instrument, observations and preliminary results of CONCERTO

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Using the integrated emission from unresolved sources, line intensity mapping (LIM) provides a new observational window to measure the large-scale structure in the Universe from present times to the high redshift epoch of reionisation. CONCERTO (CarbON CII line in post-rEionisation and ReionisaTiOn epoch) is a low-resolution spectrometer based on the Lumped Element Kinetic Inductance Detectors (LEKID) technology, aimed at carrying out unprecedented research in star formation histories and large-scale structure via line intensity mapping of the [CII] line and galaxies clusters physics via tSZ effect. CONCERTO operates at 130 - 310 GHz and has unique capabilities in fast dual-band spectral mapping at tens arcsecond resolution and 18 arcminutes instantaneous field-of-view. The CONCERTO was installed at the 12-meters APEX telescope in Chile and the scientific observation started in July 2021. We have developed a data-processing pipeline to go from raw data to continuum and spectroscopic data cubes, including data reading and raw-data calibrating, bad KIDs masking, flat-field normalization, opacity correction, correlated noise subtraction and map projection. In this talk, I will present an overview of the instrument, observations and preliminary results of CONCERTO.

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