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Preliminary results on NIKA2 polarization observations of the Crab nebula at 260 GHz

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The Crab nebula is a supernova remnant exhibiting a highly polarized emission at millimetre wavelengths and commonly used as a standard candle for any experiment which aims to measure the polarization of the sky. Ritacco et al. 2018 have provided for the first time an estimation of its polarized spectral energy distribution (SED) in the frequency range of 23-353 GHz, confirming that a synchrotron radiation from a single population of relativistic electrons is responsible for the emission of the whole nebula.

However, uncertainties remain in the frequency range of 200-353 GHz where high angular resolution and precise polarization observations are still missing. The information provided by NIKA2 at 260 GHz combined with NIKA observations at 150 GHz gives us the unique opportunity to disentangle the contribution of synchrotron and dust components at unprecedented angular scales inside the nebula.

On another, but related, topic the NIKA2 Crab nebula polarized data will allow to improve the absolute calibration of Cosmic Microwave Experiments for the search of the imprint of the primordial gravitational waves (Aumont+2020). This contribution will show preliminary results on the Crab nebula obtained from the last commissioning campaign with NIKA2-Pol of November 2020. I will also discuss, depending on the progress of the analysis, the impact of these measurements on the understanding of the Crab nebula's physics and as calibrator for future CMB experiments.

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