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The Quijote experiment: project overview and first results

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The QUIJOTE (Q-U-I JOint TEnerife) experiment is a new polarimeter working in the frequency range 10-40 GHz, and designed to characterize the primordial B-mode anisotropy of the CMB polarization down to a sensitivity in the tensor-to-scalar ratio of $r \sim 0.05$, and to measure the level of the polarization of low-frequency Galactic foregrounds (the synchrotron and the anomalous dust emissions). The project consists of two telescopes and three instruments which will survey a large sky area (20000 sq-deg) from the Teide Observatory (Tenerife) to provide Q and U maps of high sensitivity (1-3 $\mu\text{K}/\text{beam}$ in a deeper region of 3000 sq-deg). The first telescope and the Multi-Frequency Instrument (MFI) are operative since November 2012 in the frequency range 10-20 GHz. The second telescope and two additional instruments, respectively at 30 and 40 GHz, are currently under construction. These two experiments will provide Q and U maps with a sensitivity better than 1 $\mu\text{K}/\text{beam}$. In this talk I will discuss the status of this project, its future goals, and will present the first results obtained with the MFI, with emphasis on the inferred limits on the polarization fraction of the anomalous dust emission, and on the characterization of the properties of the synchrotron polarization in various regions that we have observed.

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