

Q-U Bolometric Interferometer for Cosmology

Newsletter

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The Ultra Wide Band

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We conducted a study on a new possible design for future experiments. As QUBIC has access to frequency information within each physical band, there is no need for splitting the focal plane into distinct frequency bands.

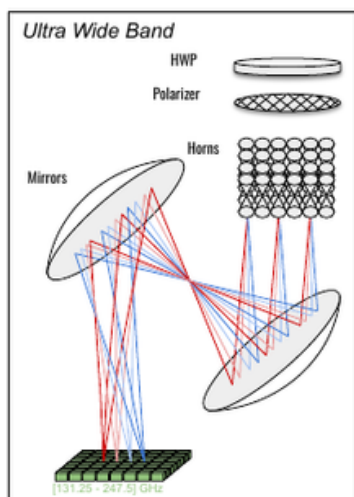


Figure 1: Schematic view of the Ultra Wide Band (UWB) design. Each color represents a light ray at a given frequency.

We have built the instrumental modeling of the so-called Ultra Wide Band as shown in Fig. 1 which measures the sky from 130 to 245 GHz with a single focal plane (a notch filter is placed at around 183 GHz to avoid water line emission). Simulations have been performed using frequency map-making and components map-making showing that this new design is similar to the original one from the sensitivity point of view but it has only one focal plane instead of two (and then half the number of detectors). This reduction has multiple benefits as a lower contribution of the noise from the detectors themselves, a lower overall cost, and finally, it pushes forward the spectral capability of QUBIC.



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