



## LEKIDs as mm-wave polarisation analysers: fabrication, test bench and early results

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We have demonstrated in an earlier paper that LEKIDs can be used in a polarisation selective way in a filled array configuration. A polarised response can be achieved by means of thick Nb polarising grids lithographed on the rear side of a 300 microns silicon wafer, on which Al resonators have been previously patterned. In the most interesting scheme that we have investigated, a unit cell formed by 4 pixels (2 by 2) responds simultaneously to two orthogonal (cartesian) polarisation states. To assess the effectiveness of this detection scheme, we have fabricated a first generation of devices (9 small arrays, 20-25 pixels each, on a 4" Silicon wafer) by using a double-sided mask aligner suitable for a precise positioning of the individual grids in correspondence of each resonator's meander, for the different LEKID geometries. We describe here the realisation of these first devices. The construction of a dedicated polarimetric test bench is also described in this contribution, together with the first characterization results. We consider this activity as a first and necessary step to evaluate the polarisation purity attainable with polarisation-sensitive pixels whose size is comparable to the wavelength. This is a fundamental information to drive further studies.