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Antenna lens array for large scale M-KIDs camera

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***Abstract*— We are developing antenna-coupled Kinetic Inductance Detectors for large cameras like APEX and NIKA. The basic KID consists of a quarter-wave coplanar waveguide (CPW) resonator. One end of the resonator is coupled to the transmission line while the other one is shorted to ground. A twin-slot antenna focuses incident radiation on the shorted end. The radiation is concentrated and focused on the antenna by silicon elliptical lens segments glued on the back side of the KID sample. Due to Nyquist spatial sampling requirement, the individual lens dimensions are close to the wavelength, which makes geometrical optics approach insufficient. Physical optics calculations are required to achieve a good accuracy. We present the simulations performed with microwave studio CST in order to optimize the antenna and lens design increasing the optical efficiency.**