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Design Optimization of a 10 Kilopixel Optical Band Microwave Kinetic Inductance Detector

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In order to make improved spectral imaging measurements in the ultraviolet, visible and near infrared bands, we investigated the design of a 10 kilopixel Microwave Kinetic Inductance Detector (MKID) sensitive in these bands. We evaluate design parameters and different geometries for MKIDs arrays with equally spaced resonant frequencies and high intrinsic and coupling quality factors. Resonance frequencies were chosen in the range of 2.8-4.8 GHz with an average of 2 MHz intervals. We describe the optimization of our design, including reduced cross-coupling. Through simulations, we find the average intrinsic and coupling quality factors to be on the order of 107 and 3 X 104 respectively, which are good enough for our purposes.

Less than 5 years of experience since completion of Ph.D

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Student (Ph.D., M.Sc. or B.Sc.)

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