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title: on-chip spectrometry at THz frequencies and high resolving power

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Building upon the legacy of SuperSpec, an on-chip spectrometer operating at 1-mm that will begin observations in 2019, we are pursuing new technologies that will extend this technology to higher frequencies and higher resolving powers. This requires the use of new dielectrics, including both amorphous silicon and crystal silicon using a flipped SOI wafer process, new microstrip materials that can operate above 1 THz, and low-volume aluminum kinetic inductance detectors with a very high response. In order to operate at frequencies as high as 2.5 THz, we are designing spectrometer prototype that uses cavity resonators fabricated from silicon wafers using deep reactive ion etching, followed by a repeated oxidation and HF smoothing process. We will present simulations and initial test data for the materials that will be used in these designs, and optical test results of the mm-wave properties of crystal-dielectric microstrip prototypes.

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

N

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

N

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