Contribution ID: **89** Type: **Poster**

Large Area TES Chip with 40meV Resolution

Tuesday 23 July 2019 18:45 (15 minutes)

Future low mass Dark Matter searches will require sensitivity to single optical phonons, corresponding to thresholds of about 100meV. This motivates the design of sensors with relatively large areas, and excellent energy resolution.

In this talk I will discuss the performance of a $100\mu\mathrm{m} \times 400\mu\mathrm{m}$ Tungsten Transition Edge Sensor (TES) with a T_c of 40mK. This device has a measured Noise eqivalent power (NEP) of $1.5 \times 10^{-18}\mathrm{W}/\sqrt{\mathrm{Hz}}$, and a bandwidth of 2.6kHz, suggesting a resolution of a dirac delta energy deposit of 40meV. This energy resolution is comparable to world leading Microwave Kinetic Inductance Detectors (MKIDs) and TES based optical photon sensors, but with a device of much larger size.

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

Y

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

Y

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Session Classification: Poster session

Track Classification: Low Temperature Detector Development and Physics