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## TES Based Light Detectors for CUPID using an IrPt bi-layer transition edge sensor

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CUPID is a proposed upgrade to the ton-scale neutrinoless double beta decay experiment, CUORE which is currently operating at the Laboratori Nazionali del Gran Sasso (LNGS). The primary background in CUORE are degraded  $\alpha$ 's, and CUPID aims to improve this background by over a factor of 100 via a two channel energy collection approach using scintillation light and heat. This will allow for event by event discrimination of  $\alpha$  and  $\gamma/\beta$  interactions. In order to meet the timing and energy resolution requirements of CUPID and beyond, large area light detectors which use low-Tc transition edge sensors (TES) deposited on Si wafers are a promising technology. Here we will present the current state of the ongoing collaboration with ANL to develop light detectors using an IrPt bilayer TES with Au pads to enhance thermal conductivity to the Si wafer. We report on the preliminary measures of timing and energy resolution, and possible differences in response due to position. Additionally we will discuss ongoing plans to explore multiplexed readout and other improvements.

### Collaboration

**Primary author:** WELLIVER, Bradford (UC Berkeley)

**Presenter:** WELLIVER, Bradford (UC Berkeley)

**Session Classification:** Cryogenic, Superconductive and Quantum Devices