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TKIDs: MKIDs (not only) for X-ray astronomy

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The Mazin Lab at UC Santa Barbara develops Thermal Kinetic Inductance Detectors (TKIDs) for X-ray imaging spectroscopy.
I will present our recent progress developing TKIDs for X-ray imaging spectroscopy in the 0.5 to 20 keV band. TKIDs are optimized for X-ray detection by suspending their inductor and a separate X-ray absorber on a freestanding Si3N4 membrane and by operating them as microcalorimeters. They have the potential to achieve time and energy resolutions comparable to TESs while retaining the passive multiplexibility of MKIDs, thus offering a promising and feasible way to kilo- or even mega-pixel X-ray detector arrays. With considerably saturated prototypes we have already demonstrated a TKID energy resolution of 75 eV at 5.9 keV, and I will elaborate on our plans to further improve our TKID design in order to find out how close to the projected TKID energy resolution of less then 0,1% we can get.

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