

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Absorber

Materials for Transition-Edge Sensor X-ray Microcalorimeters¹ ARI-DAVID BROWN, SIMON BANDLER, REGIS BREKOSKY, JAMES CHERVENAK, FRED FINKBEINER, NAKO IYOMOTO, RICHARD KELLEY, CAROLINE KILBOURNE, FREDERICK PORTER, NASA Goddard Space Flight Center, ENECTALI FIGUEROA-FELICIANO, Massachusetts Institute of Technology, TAREK SAAB, University of Florida, JOHN SADLEIR, NASA GSFC/University of Illinois — Arrays of superconducting transition-edge sensors (TES) can provide high spatial and energy resolution necessary for x-ray astronomy. High quantum efficiency and uniformity of response can be achieved with a suitable absorber material, in which absorber x-ray stopping power, heat capacity, and thermal conductivity are relevant parameters. Here we compare these parameters for bismuth and gold. We find that the thermal conductivity of these materials is highly dependent upon the thin film deposition technique. Furthermore, we briefly discuss the performance of our x-ray detectors when they possess cantilevered evaporated Bi/Au, electroplated Bi/Au, and electroplated Au absorbers.

¹A portion of this research was supported by an appointment to the NASA Postdoctoral Program at Goddard Space Flight Center, administered by Oak Ridge Associated Universities through a contract with NASA.

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Date submitted: 22 Nov 2006

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