Metallic Magnetic Calorimeters for X-ray Spectroscopy

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Abstract **-** An increasing number of experiments employ low temperature radiation/particle detectors which are based on a calorimetric detection scheme and operate at temperatures below 100mK. Metallic magnetic calorimeters use a metallic paramagnetic temperature sensor in tight thermal contact with the x-ray absorber. The magnetization of the sensor is used to monitor the temperature change of the detector upon the absorption of single photons, which is proportional to the absorbed energy. Low-noise high-bandwidth dc-SQUIDs read out the small changes in magnetization. An energy resolution of $\Delta E_{\mathrm{FWHM}} = 2.7\mathrm{eV}$ was obtained for x-ray energies up to 6 keV.

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