Development of Integrated Magnetic Microcalorimeters for Gamma-Ray Spectroscopy

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We present a progress report on the development of our first complete magnetic microcalorimeter detectors. The target energy range is 100KeV, for applications in nuclear forensics. A novel feature of the design is the integration of the SQUIDs and sensing coils onto the same chip. This single chip architecture greatly reduces parasitic inductance in the sensing circuit, improving performance over flux transformer coupled devices. We describe design, fabrication strategies, and some supporting experimental results.