**Magnetic Micro-Calorimeters**

Metallic magnetic micro-calorimeters (MMCs) are energy dispersive detectors operated at temperatures below 0.1 Kelvin. Their resolving power $E/\Delta E$ approaching 5000, the intrinsic response time well below 1 μs and the excellent linearity make magnetic micro-calorimeters very attractive for numerous experiments.

In MMCs, the magnetization of the sensor is used to monitor the temperature change of the detector upon the interaction of a particle. This temperature change is proportional to the absorbed energy. Low-noise high-bandwidth dc-SQUIDs read out the small changes in magnetization.

First prototypes of small arrays have been successfully used in several experiments. Based on this experience we are presently developing 8×8 pixel arrays for x-ray spectroscopy with eV resolution as well as a 64×64-pixel array for fast neutral molecules, which covers 45×45 $mm^2$.

A microwave multiplexing scheme is being developed for the simultaneous read-out of large MMC arrays. The microwave multiplexing is one of the key technologies for the ECHo (Electron Capture in Ho-163) experiment which aim to investigate the electron neutrino mass in the sub-eV range by the analysis of the Ho-163 electron capture spectrum. To reach this sensitivity, about 10^5 MMCs having Ho-163 ions embedded in the absorbers and showing less than 2 eV FWHM energy are planned.

In this talk the design, fabrication and performance of MMCs will be discussed.