Poster

maXs - Microcalorimeter Array for High-Resolution X-ray Spectroscopy in Atomic Physics

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We report on latest results and the current status of maXs (microcalorimeter array for high-resolution X-ray spectroscopy). maXs is composed of metallic magnetic calorimeters based on paramagnetic temperature sensors made of Au:Er for high-resolution X-ray spectroscopy of highly charged high- and medium-Z ions. Our present prototype detectors maXs20 and maXs200, for energies up to 20keV and 200keV, are 1x8 arrays that have already shown convincing performance. maXs200 has been characterized using a ^{241}Am source performing as expected from numerical calculations. A maXs20 device started operation in a pulse-tube cooled ADR on an EBIT at the MPI for Nuclear Physics. We report on results of first measurements and on technical details regarding the shielding of stray magnetic fields from the EBIT and reducing the effects of vibrations from the pulse-tube. We present the current state of combining these two detectors into a single micro-fabricated maXs-array. F or the operation at ion traps and storage rings a pulse-tube cooled dilution refrigerator is presently set up with a side arm on mixing chamber level to minimize the distance between detector and X-ray source. We report on the thermal and mechanical design of the side arm and on the shielding against stray magnetic fields.