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## maXs: Metallic Magnetic Calorimeter Arrays for High Resolution X-Ray Spectroscopy

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The high dynamic range as well as the very good linearity in combination with an excellent energy resolution make metallic magnetic calorimeters (MMCs) ideal detectors for different applications in high-resolution X-ray spectroscopy. The maXs detector family consists of several 1- and 2-dimensional MMC arrays based on paramagnetic temperature sensors made of Ag:Er or Au:Er that are optimized for X-ray energies up to 20, 30 and 200 keV, respectively.

We report latest results of the two-dimensional maXs-30 detector array which features 8x8 pixels with an active detection area of  $4 \times 4 \text{ mm}^2$ . The detector achieved an energy resolution of 9.8 eV at 60 keV, corresponding to an excellent resolving power above 6000. The non-linearity of the detector is as small as 1 % at 60 keV and allows for an absolute energy determination of line energies with only a few calibration lines. A sub-eV precision on line energies up to 60 keV was achieved. We discuss the homogeneity over the 64-pixel array and show that the uniform behaviour allows easy co-adding of the individual spectra of different pixels even over several months of measurement time.

Due to this performance, the maXs detector arrays are currently used in a number of experiments, ranging from the spectroscopy of highly charged ions at storage rings or EBITs in atomic physics to the successful investigation of the nuclear isomer state of  $^{229}\text{Th}$ . Furthermore, these detectors are promising candidates to be used in the upcoming IAXO experiment for the search of solar axions.

### Less than 5 years of experience since completion of Ph.D

Y

### Student (Ph.D., M.Sc. or B.Sc.)

N

**Primary authors:** HENGSTLER, Daniel (KIP, Heidelberg University); GEIST, Jeschua; SCHÖTZ, Christian (KIP, Heidelberg University); ALLGEIER, Steffen (KIP, Heidelberg University); FRIEDRICH, Marvin (KIP, Heidelberg University); KEMPF, Sebastian (Kirchhoff Institute for Physics, Heidelberg University); GASTALDO, Loredana (Kirchhoff Institute for Physics, Heidelberg University); FLEISCHMANN, Andreas (Heidelberg University); ENSS, Christian (Kirchhoff Institute for Physics, Heidelberg University)

**Presenter:** HENGSTLER, Daniel (KIP, Heidelberg University)

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