Detector Lab's

Technical Seminars

Physics and application of metallic magnetic calorimeter

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KPH Seminar Room 1, Johann-Joachim-Becher-Weg 45

Building 1371, Room 00.260 (ground floor)

Low temperature metallic magnetic calorimeters (MMC) have demonstrated to fulfill the requirements for many applications ranging from high resolution x-ray spectroscopy to detection of neutral molecules. In particular, MMCs are used or planned to be used in large experiments in the field of astroparticle physics related to the study of fundamental properties of neutrinos, and to the search for solar axions. The most important properties of MMCs are: a very good energy resolution, reaching 1.6 eV FWHM at an energy of 6 keV, a fast response time, well below 1 µs, and a reliable calibration function.

After a short introduction on the physics of MMCs, a description on how the design of MMCs can be optimized for targetting the requirements of different experiments will be presented. Some recent results obtained with MMC arrays will be discussed.

Loredana Gastaldo studied Physics at the University of Genoa and achieved the PhD in 2005. She worked as an European Community Research Fellow at the Technical University of Munich, and as leader of the research group Quantum Sensors at Heidelberg University. Since 2016, she is Junior Professor at Heidelberg University where she also did the Habilitation. She has worked in leading positions for the LUMINEU, IAXO, AMoRE and ECHo collaborations, and since 2011 she is spokesperson of ECHo.