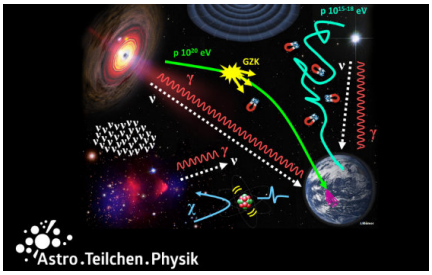

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Magnetic microcalorimeters for future neutrino mass experiments and dark matter searches

Wednesday, October 16, 2024 5:49 PM (2 minutes)

Magnetic microcalorimeters (MMCs) are cryogenic single-particle detectors that combine an outstanding energy resolution, a fast signal rise time, a wide energy bandwidth as well as an almost ideal linear detector response. For this reason, MMCs are highly suited for precision experiments or rare-event searches in astroparticle physics as well as neighboring physics fields.

In this contribution, we discuss our recent detector R&D efforts for two novel and very promising experiments, i.e. the Direct Search Experiment for Light Dark Matter (DELight) as well as the future neutrino-mass experiment KATRIN++. For the former, we will develop MMC-based athermal phonon detectors, while the latter will rely on thermal MMCs as used for high-resolution X-ray spectroscopy with great success. We will outline challenges related to both experiments and will conclude with a short discussion of our strategy to overcome these challenges.

Summary

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Session Classification: Poster session leading into social dinner buffet