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DELight: a Direct search Experiment for Light dark matter with superfluid helium

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A new era has begun towards a direct detection of ever lighter thermal dark matter candidates. To reach ultra-low detection thresholds necessary to probe unprecedentedly low dark matter masses, novel detector designs and target material alternatives are essential. One such target material is superfluid Helium which has the potential to probe so far uncharted light Dark Matter parameter space at sub-GeV/c² masses. The “Direct search Experiment for Light dark matter”, DELight, will be using superfluid Helium as active target, instrumented with Metallic Magnetic Calorimeters (MMCs). It is a new experiment in its planning phase which will be introduced in this presentation together with the potential dark matter reach a Helium based detector offers.

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