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Sub-GeV Dark Matter Searches with EDELWEISS: New results and prospects

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The Edelweiss collaboration performs light Dark Matter (DM) particles searches with germanium bolometer collecting charge and phonon signals. Thanks to the Neganov-Trofimov-Luke (NTL) effect, a RMS resolution of 4.46 electron-hole pairs

was obtained on a massive (200g) germanium detector instrumented with a NbSi Transition Edge Sensor (TES) operated underground at the Laboratoire Souterrain (LSM) de Modane.

This sensitivity made possible a search for WIMP using the Migdal effect down to $32 \text{ MeV}/c^2$ and exclude crosssections down to 10^{-29} cm^2 .

It is the first measurement in cryogenic germanium with such thermal sensor, proving the high relevance of this technology.

Furthermore, such TES have shown sensitivity to out of equilibrium phonons, paving the way for EDELWEISS new experience CRYOSEL.

This is an important step in the development of Ge detectors with improved performance in the context of the EDELWEISS-SubGeV program.

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