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New Ideas for the Direct Detection of sub-GeV Dark Matter

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The direct detection of Dark Matter particles with mass below the GeV-scale is hampered by soft nuclear recoil energies and finite detector thresholds. We propose to bypass the kinematic limitations by considering the inelastic channel of photon emission in the nuclear recoil. Our proposed method allows to set the first limits on Dark Matter below 500 MeV in the plane of Dark Matter mass and cross section with nucleons. In a second part, the direct detection of mass-split SIMPs will briefly be discussed.

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