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Detecting dark matter from Supernovae GUSTAVO MARQUES-TAVARES, WILLIAM DEROCCO, PETER GRAHAM, Stanford University, DANIEL KASEN, SURJEET RAJENDRAN, University of California, Berkeley — The central region of Supernovae are one of the hottest and densest regions in the Universe. Due to the high temperatures, particles with masses below hundreds of MeV can be copiously produced as long as they have non-negligible couplings to the Standard Model. If dark matter has sub-GeV mass it will be produced in the hot Supernovae core and will have sufficiently large momenta to be detectable in direct detection experiments. In this work we investigate the sensitivity of current and future Xenon based direct detection experiments to a simplified model of dark matter which interacts with the Standard Model via the dark photon portal.

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