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Dark Photon Searches with SuperCDMS Technology

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The Super Cryogenic Dark Matter Search (SuperCDMS) is a direct dark matter search experiment designed to observe nuclear recoils induced by WIMPs. However, it is also sensitive to dark photons that kinetically mix to the Standard Model photon. This mixing allows dark photons to produce electron excitations through the photoelectric absorption, depositing an energy equal to the dark photon mass. The band structure of semiconductor detectors gives this technology sensitivity to dark photon masses as small as a few eV, allowing to probe new parameter space at dark photon masses from a few eV to about 1 keV. This talk will highlight the first dark photon search results using single electron-hole-pair detector data and will discuss the prospect of a search with the upcoming SuperCDMS SNOLAB experiment.

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