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Nuclear Dark Matter

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I will outline models of Nuclear Dark Matter, where the dark matter states are large composite objects consisting of constituent “dark nucleons”. I will present some of the details of the possible interactions of these large composite dark matter states with the Standard Model sector. Elastic scattering with SM nuclei can be coherently enhanced by factors as large as A^2 , where A is the number of constituents in the composite state (there exist models in which DM states of very large A may be realised). This enhancement, for a given direct detection event rate, weakens the expected corresponding signals at colliders by up to $1/A$. Moreover, the spatially extended nature of the DM states leads to an additional, characteristic, form factor modifying the momentum dependence of scattering processes, altering the recoil energy spectra in direct detection experiments.

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