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Direct Detection of Composite Asymmetric Dark Matter

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We investigate the direct detection constraint on the composite asymmetric dark matter (ADM), where the confining gauge dynamics realized in the dark sector. The dark baryonic matter is the dark matter candidate, in particular it is similar to our baryons when we assume the SU(3) dark QCD in the dark sector. In addition, the dark sector is connected to the standard model sector through the dark photon portal to alleviate several cosmological problems, and we can probe the dark sector through the same dark photon. As for the direct detection, through the dark photon, the dark baryons can scatter off our baryons and leptons. When the dark baryons are charged under the U(1)_D (called dark proton), ordinary matter couples to the dark matter through the current interaction. Meanwhile, when the dark baryons are neutral under the U(1)_D (called dark neutron), ordinary matter couples to the dark matter through dipole interaction. In this talk, I will discuss the current constraints on and the future sensitivities to the composite ADM from the direct detection experiments.

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