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Revisiting Dipole Dark Matter at Proposed International Linear Collider

If the dark matter is a Dirac fermion(χ) and it has an electric and magnetic dipole moment, it can couple with the Standard Model photon through a dimension five effective operators, suppressed by a New Physics(NP) scale Λ . We probe the parameter space in terms of Dark Matter mass (m_{χ}) and the New Physics scale Λ via a mono-photon signal at the upcoming International Linear Collider(ILC). With the beam polarization taken into account, and with the beam configurations of the ILC with $\sqrt{s} = 500$ GeV and 4 ab⁻¹ integrated luminosity, we show that it can probe DM up to a Λ value of 3.8 TeV.

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