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Andrew Spray (CTPU, Inst. for Basic Science, Korea): Prospective Searches for Electroweak Dark Matter at CLIC

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Electroweak multiplets are an archetypal candidate for the WIMP paradigm of thermal dark matter. Examples include the Wino and Higgsino of supersymmetry, as well as the fermion quintet of Minimal Dark Matter. We discuss the prospective limits and discovery reach at the proposed future lepton collider CLIC on these and similar models. When the components of the multiplet are approximately degenerate, search strategies are sensitive to the lifetime of the lightest charged state, or equivalently the mass splitting. We combine signals including disappearing tracks, long-lived charged particles and mono-photons to cover different regions of parameter space. Additionally, for mass splittings of a few GeV, we show how searches based on a single hard lepton offer the greatest sensitivity by allowing the reconstruction of the soft decay products. Finally we discuss the implications of these limits and the relic density in more general models.

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