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Constraining Electroweakinos in the Minimal Dirac Gaugino Model

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Supersymmetric models with Dirac gauginos, instead of Majorana, are known to have distinctive phenomenological properties. Concretely, in the Minimal Dirac Gaugino Supersymmetric Standard Model (MDGSSM) the electroweakino sector is characterized by an enriched spectrum with a total of 6 neutralinos and 4 charginos exhibiting naturally small mass splittings and thus, yielding a frequent presence of scenarios with Long Lived Particles (LLPs).

In this talk, we explore the electroweakino sector of the MDGSSM on the light of dark matter (DM) and collider constraints. First, we delineate the parameter space where the lightest neutralino is a viable DM candidate, that makes for at least a percentage of the observed relic density and eludes DM direct detection bounds. The remaining scenarios are then confronted against
existing prompt and LLP LHC searches for new physics. Finally, we discuss the signature that predominantly characterizes neutral LLP scenarios but has not yet been covered at the LHC.

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