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WIMP Searches at the International Linear Collider (15' + 5')

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Weakly Interacting Massive Particles (WIMPs) are among the favored candidates for Dark Matter and can be searched for in dedicated experiments as well as at colliders. WIMP searches at lepton colliders directly probe the WIMPs' coupling to electrons and are thus complementary to both hadron collider searches and direct detection, which rely on the WIMPs' coupling to hadrons.
At lepton colliders, WIMP pair production can be probed for masses up to nearly half the center-of-mass energy via a photon from initial state radiation as the observable signal particle. Polarised beams are essential to reduce Standard Model backgrounds and to determine the properties of the WIMPs in case a signal is discovered.
In this contribution, the future prospects for WIMP searches and characterization will be presented based on a detailed simulation study performed for the International Linear Collider. The dependencies of the results on center-of-mass energy, luminosity and beam polarisation will be discussed in the context of other colliders and special detector requirements for this type of search will be highlighted.

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