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Reconstructing WIMP dark matter properties through signal measurements in direct detection, Fermi-LAT, and CTA

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I will examine the projected ability to reconstruct the mass, scattering, and annihilation cross section of dark matter in the new generation of large underground detectors in combination with diffuse gamma radiation from expected 15 years of data from Fermi-LAT observation of 46 local spiral dwarf galaxies and projected CTA sensitivity to a signal from the Galactic Center. I will consider several benchmark points inspired by rather general extensions of the Standard Model, spanning a wide range of WIMP mass, different annihilation final states, and large enough event rates to warrant detection in one or more experiments. Direct and indirect detection experiments can be used in complementarity to ameliorate the respective determinations, which in individual experiments can at best be rather poor. A remarkable improvement in WIMP reconstruction can be achieved by combining discovery data from Fermi-LAT and/or CTA, or by combining gamma-ray observatories with direct detection experiments.

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