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“Dark Matters in Supersymmetry”

The dark matter of the Universe may be composed of the Lightest Supersymmetric Particle (LSP). I will discuss scenarios where the LSP is a gravitino or a neutralino. When the LSP is a gravitino, I will show that cosmology places a powerful upper bound on the masses of the rest of the superpartner spectrum, requiring superpartners parametrically near the weak scale. Alternatively, if the dark matter is a neutralino it can scatter against nuclei by exchanging the Higgs boson. As I will review, ongoing direct detection experiments are now probing the interesting parameter space for Higgs exchange. However, I will identify "blind spots" in neutralino parameter space that cannot be probed by direct detection.