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Hunting for WIMPs, how low should we go?

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We discuss direct detection of WIMP dark matter in two benchmark cases: a Majorana fermion that primarily interacts via the Z-boson, and a Majorana fermion whose relic density is primarily set via co-annihilations with colored partners. We discuss the Z-mediated case with reference to a simple UV-completion, the singlet doublet model. We discuss the co-annihilation case with reference to stop co-annihilation in the Minimal Supersymmetric Standard Model. We find that Z-mediated Dark Matter is likely to be largely probed by future experiments, but co-annihilating Dark matter may present a formidable challenge.

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