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Searches for a Dark Matter Candidate in Particle Physics Experiments at the Fermilab Tevatron PAUL GEFFERT, MAX GONCHAROV, EUNSIN LEE, RISHI PATEL, DAVID TOBACK, PETER WAGNER, VYACHESLAV KRUTELYOV, CDF COLLABORATION — Astronomical observations have shown that the amount of visible matter in the universe comprises only a fraction of the total mass of the current universe. Models of Supersymmetry can account for this mass by predicting new particles. We present a search for these particles in proton anti-proton collisions at the Fermilab Tevatron using a new timing device on the Collider Detector at Fermilab and discuss prospects for future searches into the cosmologically favored region of parameter space for models with heavy, long-lived neutralinos that decay into photons and gravitinos.

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