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A multicomponent dark matter scenario consistent with experiment ROLAND ALLEN, REAGAN THORNBERRY, MAXWELL THROM, JOHN KILLOUGH , DYLAN BLEND , MICHAEL ERICKSON, BRIAN SUN, BRETT BAYS, GABRIEL FROHAUG, Texas A&M Univ — We propose a dark matter scenario which is ideal in the sense that (1) all of the well-known successes of supersymmetry are preserved, (2) the parameters can satisfy naturalness, (3) the addition of an extended Higgs sector implies a doubly rich plethora of new particles and new physics to be discovered, (4) the mass of the dominant dark matter WIMP is ≤ 125 GeV/c^2, (5) the gauge couplings of this particle are precisely defined, and (6) naturalness implies a limited range for its Higgs-mediated couplings. The firm prediction of ≤ 125 GeV/c^2 for the mass of the dominant dark matter particle would have been disconfirmed if the positron excess observed by AMS-02 were evidence of a dark matter particle at ~ 800 GeV or higher, but this interpretation has itself been disconfirmed by Planck observations. The predicted mass is, on the other hand, consistent with both the Planck results and several independent analyzes of γ-ray and antiproton excesses from the Fermi-LAT and AMS-02 experiments, respectively, all of which imply masses of ~ 100 GeV/c^2 or less if the origin is dark matter annihilation.

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