Abstract Submitted
for the TSF19 Meeting of
The American Physical Society

A multicomponent dark matter scenario which is consistent with the antiproton observations of AMS-02 ALEJANDRO ARROYO, CADEN LAFONTAINE, REAGAN THORNBERRY, DYLAN BLEND, GABRIEL FROHAUG, ROLAND ALLEN, Texas A&M University — We have proposed a dark matter scenario [1] with two stable WIMPs (weakly interacting massive particles) – the neutralino predicted by supersymmetry and a new particle resulting from an extended Higgs sector, which we have called the Higgson H to distinguish it from the Higgs boson h and the Higgsino $\tilde{h}$. The Higgson is rigorously predicted to have a mass of ≤ 125 GeV/c^2, and this prediction is consistent with the antiproton observations of AMS-02 [2,3] which provide evidence at the 3-5 σ level for a dark matter particle with a mass near 100 GeV or below. [1] Dylan Blend, Reagan Thornberry, Alejandro Arroyo, Gabriel Frohaug, Caden LaFontaine, and Roland E Allen, "A multicomponent dark matter scenario and the experimental evidence supporting it", submitted. [2] Ilias Cholis, Tim Linden, and Dan Hooper, "A Robust Excess in the Cosmic-Ray Antiproton Spectrum: Implications for Annihilating Dark Matter", Phys. Rev. D 99, 103026 (2019), arXiv:1903.02549 [astro-ph.HE]. [3] Alessandro Cuoco, Jan Heisig, Lukas Klamt, Michael Korsmeier, and Michael Krmer, "Scrutinizing the evidence for dark matter in cosmic-ray antiprotons", Phys. Rev. D 99, 103014 (2019), arXiv:1903.01472 [astro-ph.HE].

Roland Allen
Texas A&M University

Date submitted: 08 Oct 2019 Electronic form version 1.4