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**Annihilation processes for a new dark matter WIMP** BRANDON TORRES, CADEN LAFONTAINE , TREVOR CROTEAU, BAILEY TALLMAN , SPENCER ELLIS, SABRINA HERNANDEZ, DIEGO CRISTANCHO GUERRERO, DRUE LUBANSKI, ROLAND ALLEN, Texas A&M University — We propose a new dark matter WIMP which results from an extended Higgs sector, and which has only second-order gauge couplings. The coupling to the Higgs is constrained to be small by direct-detection experiments, and potential couplings to supersymmetric partners are also second-order. For this reason the annihilation cross-section is relatively small. Nevertheless, there would be inconsistency with both the observed relic abundance of the dark matter and the Fermi-LAT measurements of gamma-ray emissions from dwarf spheroidal galaxies if the mass of our proposed particle were larger than that of the W boson. We will discuss the annihilation processes for this particle, and contrast them with those for the neutralino of supersymmetry and the bosonic dark matter candidate of the *ad hoc* “inert doublet model”.

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