

Abstract Submitted
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Higgs-mediated and one-loop-mediated scattering for direct detection in a multicomponent dark matter scenario with two coexisting WIMPs DIEGO CRISTANCHO GUERRERO , BAILEY TALLMAN , SABRINA HERNANDEZ , SPENCER ELLIS , DRUE LUBANSKI , BRANDON TORRES , CADEN LAFONTAINE , TREVOR CROTEAU , ROLAND ALLEN , Texas A&M University — The amazing sensitivity of current direct-detection experiments has imposed stringent constraints on any theoretical dark matter candidate. In particular, the most simplistic models with supersymmetry (susy) and weakly interacting massive particles (WIMPs) have been disconfirmed by experiment, and this has led to increasing pessimism about their existence. But there are still quite compelling arguments for susy and WIMPs. Here we discuss a multicomponent dark matter scenario with two WIMPs the neutralino of susy and the higgson [1] of an extended Higgs sector. Both these particles are stable because neither can decay into a set of particles containing the other. We discuss the potential for observing this second particle, which has a mass of ~ 75 GeV, in direct detection experiments such as LZ and Xenon nT. The most promising mechanisms for scattering are a relatively weak Higgs exchange and a four-vertex interaction with vector bosons whose coupling to quarks is represented by one-loop diagrams. [1] Reagan Thornberry, Gabriel Frohaug, Caden LaFontaine, Bailey Tallman, Alex Behne, Steven Sellers, Matthew Sadler, and Roland E. Allen, European Physical Journal Special Topics (in press).

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