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Learning about scalars in the dark sector from generic fifth force searches ROSS DEVOL, GINTARAS DUDA — To explain the PAMELA/FERMI positron excess through dark matter annihilations, leptophilic dark matter, dark matter that preferentially decays into leptons, is needed. Models such as exciting dark matter (XDM) provide a new annihilation channel for dark matter, $\chi\chi \rightarrow ??$, where ? is a new scalar particle. The decay of this scalar into electron-positron or muon-antimuon pairs can explain the PAMELA excess. Since scalar fields generically lead to fifth-force type interactions, this scalar particle and its interactions are constrained by generic fifth force searches. This work will present constraints on the mass of the new scalar particle in the dark sector from fifth force searches.

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