

Abstract Submitted
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Dark Energy from Interacting Dark Fermions TERRENCE GOLDMAN, Los Alamos National Laboratory, BRUCE MCKELLAR, University of Melbourne, PAUL ALSING, GERARD STEPHENSON, University of New Mexico — Physics is rife with interacting systems that exhibit negative pressure: atomic nuclei are very well known examples. We examine the range of parameters, for neutral fermions interacting only by exchange of an extraordinarily light scalar particle, that produce a negative pressure on the scale of the Universe over time periods where Dark Energy is or may be relevant. Of known or expected neutral Majorana fermions, active neutrinos can be ruled out but sterile neutrinos would work, as well as the LSP, to describe the recent observations of Dark Energy effects. After a phase change required by the instability responsible for the negative pressure, the resulting clouds of neutral fermions will contribute to Dark Matter. Nothing requires that this can only happen once.

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