

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Constraining Exotic Weakly-Coupled Long-Range Interactions with Pseudoscalar and Axial Couplings With Unpolarized Data
SHEAKHA ALDAIHAN, WILLIAM MICHAEL SNOW, Indiana Univ - Bloomington, DENNIS KRAUSE, Wabash College-Purdue University — Exotic long-range interactions can be generated by many possible sources beyond the Standard Model. Very stringent constraints exist on spin-independent Yukawa interactions from ultralight scalar or vector bosons. On the contrary, constraints on exotic interactions with spin-dependent pseudoscalar and axial couplings are very weak. The extreme disparity between the limits for these two cases suggests that new limits on spin-dependent couplings could be set by comparing the spin-independent component of two-boson exchange processes involving spin-dependent couplings to existing experimental limits on spin-independent interactions. In this talk we present two examples of physical mechanisms involving spin-dependent couplings which lead to spin-independent interactions and whose analysis can lead to improved constraints. The first involves effects arising from higher order exchange processes and the other makes use of exchanges of pseudoscalar and axial bosons between bound-state systems.

Sheakha Aldaihan
Indiana Univ - Bloomington

Date submitted: 30 Sep 2016

Electronic form version 1.4