Abstract Submitted
for the SES13 Meeting of
The American Physical Society

The 1 + 1 Dirac equation with a linear potential WALTER JARONSKI, Radford University — The Dirac equation in one spatial dimension is studied for the case of a linear potential. Different choices are made for the Lorentz nature of the potential: vector, scalar, and pseudoscalar. The existence of bound states is explored for each choice. In the scalar and pseudoscalar cases, solutions can be found by elementary means and they are of oscillator form. The use of transformations of the Foldy-Wouthuysen type in one spatial dimension is also considered. In the scalar case and for massless particles, the free FW transformation exchanges the spatial coordinate and its conjugate momentum.

Walter Jaronski
Radford University

Date submitted: 19 Sep 2013 Electronic form version 1.4