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Improving the One Dimensional Schrödinger Equation BRADLEY SCHORER, STEPHEN BRICHER, JOELLE MURRAY, Linfield College — The simple harmonic oscillator (SHO) model is a useful approach for approximating energies close to the ground state in a one dimensional hydrogen atom. According to empirical evidence, the actual potential results in an asymmetric equilibrium point and exhibits and exhibits asymptotic behavior at large distances from the nucleus. This creates a problem in the SHO model, as it does not possess such characteristics, and as a result, has energy values that do not match do not agree with the known energy levels very well. We propose a new one dimensional potential that more accurately fits the empirical data than the SHO model. We test our model by comparing the Schrödinger equation's energy states to accepted energy levels of the hydrogen atom. Possible other uses for this model include the description of energy levels of atoms other than the hydrogen atom.

> Bradley Schorer Linfield College

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