1145-81-2383   **Michael A. Maroun*** (`marounm@gmail.com`). *Estimates of Pure Point Spectra and Spectral Functions for a Lowest-order Hamiltonian as an Unbounded Self-Adjoint Operator formed from the sum of a Gravitational and a Harmonic Dark Potential.*

The nature of gravity and its interaction with light is possibly greatly different than its standard interaction within Einstein's theory of gravitation. This is most notably due to the presence of a dark sector. The measurement of the expanding but accelerating rate of expansion of the universe together with galactic masses that do not correspond to stellar or blackhole concentrated mass observations, strongly suggests the presence of a dark sector or fifth force of nature. An expading universe can be approximated by envisioning springs at each point in space. The quantum pure point spectrum for such a system in the presence of the standard gravitational potential, as well as the corresponding spectral functions are investigated. The constants parameters can be fit to actual observation data to give a rough approximation of the dark sector and hence a pure point spectral distribution with which to search for. (Received September 25, 2018)