Using Linear Delta Expansion for the Solution of the Schrödinger Equation LUIS M. SANDOVAL, New Mexico State University, JORGE A. LOPEZ, University of Texas, El Paso — In this work, we present a solution to the Schrödinger equation using a method known as Linear Delta Expansion (LDE). The method utilizes different scaling behavior that is found at different distances. In particular, we can identify three ranges of scaling behavior, which can be solved independently. At large distances, we observe an asymptotic behavior that depends only on the form of the potential. The intermediate scale is based also in exponential decay of the wave function. Finally, for short distances, the wave function is sizable. We used this method to solve the quantum anharmonic oscillator, and we obtained good results employing only algebraic equations.

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