

The conformal bootstrap is a numerical method used initially in Conformal Field Theory (CFT), which leverages symmetries and consistency conditions. We introduce the bootstrap ideas in quantum mechanics and test them in two simple models – the harmonic oscillator and the double-well. We estimate the spectrum of the harmonic oscillator and compare it to the well-known exact spectrum that can be found analytically. We also estimate the spectrum of the double-well potential and focus on the splitting of the ground state and the first excited state. We compare our estimate for ground-state splitting with the WKB approximation and path integral around instanton (one-loop approximation). These methods are not trivial; we describe them in great detail. The aim of this thesis is to introduce and test the bootstrap method on two simple quantum mechanical systems mentioned earlier using our implementation in Python and compare the obtained results with the results obtained analytically.