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Title:	Scattering and Bound States in One-Dimensional Potential
Other Titles:	Applications to Nanophysics
Authors:	Kumar, Chandan (/jspui/browse?type=author&value=Kumar%2C+Chandan)
Keywords:	Scattering and Bound One-Dimensional
Issue Date:	2022
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Citation:	Resonance, 27(7), 1165-1184.
Abstract:	We analyze a quantum particle under the influence of simple one-dimensional potentials. First, we develop qualitative techniques to determine whether the system will have bound or scattering states for a given energy. These techniques also help in asserting the shape of the wave function. We then provide a complete mathematical treatment of the wave function of a particle under the influence of three different potentials: (i) infinite well, (ii) finite well, and (iii) barrier potential. For all the cases, we exploit the symmetric nature of the potentials to calculate the bound states. We also provide examples demonstrating the usage of these models in nano-physical systems.
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