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Title:	Revisiting Siegert Pseudostates Method for Calculation of Resonances
Authors:	Jangid, Pankaj Kumar. (/jspui/browse?type=author&value=Jangid%2C+Pankaj+Kumar.)
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Abstract:	Siegert pseudostates(SPS) are defined as the solutions of Schrödinger equation for cutoff potentials satisfying outgoing boundary condition. The problem of solving boundary value problem is then reduced to standard eigenvalue problem which can be easily solved on computers. For sufficiently large number of basis functions and cutoff radius the SPSs include bound states, antibound states, resonant states and continuum. From a radial problem, the SPS formulation is extended to a full one-dimensional axis problem. The computational efficiency of this method is then illustrated by a number of model problems. To explain the quantum mechanical tunneling of resonance states, calculated by SPS method, phase space quasiproba- bility distribution functions : Wigner distribution and the Husimi distribution are calculated. The negative regions appeared in the Wigner distribution represent the interference pattern and tunneling involved in the resonance and anti-resoanance states. From these distributions the grwoing and decaying nature of resonance and anti-resonance states can be explained.

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