Dirichlet spectrum of the complex PT-symmetric Bender-Boettcher potential: $\mathbf{V(x) = -(ix)^{\nu}}$

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Normally, in quantum mechanics discrete spectrum of a one dimensional potential may consist of real eigenvalues corresponding to bound states or perfect transmission scattering states and complex eigenvalues corresponding to resonant states. For bound states one usually demands Dirichlet boundary condition on the wave function as $\psi(\pm\infty) = 0$ to extract the real eigenvalues. Since the beginning of the PT-symmetric quantum mechanics, the concept of eigenvalues in wedges of the complex x-plane has been professed and utilized to find the real discrete spectrum of the paradigm model: $V_{BB}(x) = -(ix)^{\nu}$ of Bender and Boettcher by varying ν. However, one would like to know the real spectrum of $V_{BB}(x)$ under the most common Dirichlet boundary condition. Here, we consider the parametric regimes of this potential wherein the real part of $V(x)$ is zero or a well, these regimes are $\nu \in (1,3] \cup [5,7] \cup [9,11]$. We show that the Dirichlet spectrum obtained by numerical integration of the Schrödinger equation and by the matrix diagonalization of $p^2 + V(x)$ are in agreement which eventually are the semi-classical WKB eigenvalues provided we use a concept of maximal turning points.