

Comparison of quantal and classical behavior of PT -symmetric systems at avoided crossings

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Abstract

The quantal eigenenergy spectrum and the classical motion of the 2D system $v(x, g) = \frac{1}{2}(\omega_x^2 x^2 + \omega_y^2 y^2) + \sqrt{g}xy^2$ where $g \in [-0.01, 0.01]$ are investigated. Like in the real Hermitian systems, when this system is non-Hermitian and PT -symmetric ($g < 0$), two regions of quantal spectrum, which behave differently under the slowly changing perturbation parameter g , are found. It was found that the most of the higher order second differences of eigenvalues as a function of perturbation parameter correspond to avoided crossings.

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