

Abstract

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“Where there are crossings and mutations of resonances”

Usually we (with André) control perturbative resonances to stay isolated from the others and from the top ones varying a complex parameter. In a PT-symmetric double well Hamiltonian the levels are all perturbative resonances, but there are three sets of infinite ones with different stories. Actually in this case the potential is imaginary and the double well can look as a system of a well and barrier, but is not even clear which one is the well and which one the barrier. In case of real levels there are delocalized and bilocalized states as in real double wells. And we prove that for vanishing positive semiclassical parameter infinite pairs of resonances meet and change when the semiclassical localization effect prevails on the symmetry. Quasi real double well potentials still have this effect and could be applied to molecules as other models considered with André.