

Study of the delocalization properties at isolated avoided crossings in Lipkin-Meshkov-Glick type Hamiltonian models

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The delocalization properties of the Husimi function in the vicinity of avoided crossings has been considered in LMG-type Hamiltonians. This delocalization has been quantified with the Husimi function second moment (related to the inverse participation ratio in phase space) and the Wehrl entropy, for which we have determined analytic expressions for the Dicke states and numerical calculations for arbitrary energy eigenstates. We have also made an analytic study of the monotonicity properties of the Husimi function second moment in the vicinity of exceptional points by using standard perturbation theory [1,2].

[1] O. Castaños, M. Calixto, F. Pérez-Bernal and E. Romera, Phys. Rev. E **92**, 052106 (2015).

[2] E. Romera, O. Castaos, M. Calixto and F. Prez-Bernal, Journal of Statistical Mechanics, 013101 (2017)