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pre02145319

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Coupling of eigenvalues of complex matrices at diabolic and exceptional points. (English)

J. Phys. A, Math. Gen. 38, No.8, 1723-1740 (2005). [ISSN 0305-4470]
http://dx.doi.org/10.1088/0305-4470/38/8/009

Summary: The paper presents a general theory of coupling of eigenvalues of complex matrices of an arbitrary dimension depending on real parameters. The cases of weak and strong coupling are distinguished and their geometric interpretation in two and three-dimensional spaces is given. General asymptotic formulae for eigenvalue surfaces near diabolic and exceptional points are presented demonstrating crossing and avoided crossing scenarios. Two physical examples illustrate effectiveness and accuracy of the presented theory.

Classification :

∗81Q10 Selfadjoint operator theory in quantum theory
15A90 Appl. of matrix theory to physics

Cited in ...