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**The Berry phase in a neighborhood of degenerate states. (Russian)**

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In this paper the authors investigate the behavior of parametrized families of quantum mechanical systems in the vicinity of special parameter values that give rise to two-fold degeneracy. As is well known for such systems, in the adiabatic approximation issues of anholonomy (Berry's phase) are of importance. The authors derive explicit formulae for Berry's phase close to the points of degeneracy. The new results correspond to the case of quasi-stationary states. Such states are arising as eigenvectors of physical systems represented by non-Hermitian Hamiltonians with complex eigenvalues. The imaginary parts of such eigenvalues describe the characteristic lifetime of such states. Non-Hermiticity becomes important in the description of systems with particular properties for their scattering states (Gamow states, effective scattering Hamiltonians). Degenerate states of such systems have a number of unusual mathematical properties, the authors nicely describe. The main result of the paper is a general asymptotic formula for Berry's phase in this unusual situation.

Reviewed by *Péter Pál Lévay*