

Selected Abstracts from Other Physical Review Journals

Abstracts of papers that are published in other Physical Review journals and may be of interest to Physical Review A readers are printed below.

Nonadiabatic noncyclic geometric phase of a spin- $\frac{1}{2}$ particle subject to an arbitrary magnetic field Shi-Liang Zhu and Z. D. Wang *Department of Physics, University of Hong Kong, Pokfulam Road, Hong Kong, People's Republic of China* Yong-Dong Zhang *Department of Automatic Control Engineering, South China University of Technology, Guangzhou, 510641, People's Republic of China* (Received 19 May 1999)

We derive a formula of the nonadiabatic noncyclic Pancharatnam phase for a quantum spin- $\frac{1}{2}$ particle subject to an arbitrary magnetic

field. The formula is applied to three specific kinds of magnetic fields. (i) For an orientated magnetic field, the Pancharatnam phase is derived exactly. (ii) For a rotating magnetic field, the evolution equation is solved analytically. The Aharonov-Anandan phase is obtained exactly and the Pancharatnam phase is computed numerically. (iii) We propose a kind of topological transition in one-dimensional mesoscopic ring subject to an in-plane magnetic field, and then address the nonadiabatic noncyclic effect on this phenomenon. [S0163-1829(00)04601-4] [Phys. Rev. B **61**, 1142 (2000)]