

TIME-DEPENDENT TWO-LEVEL MODELS AND ZERO-AREA PULSES

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A two-state quantum system subjected to a resonant pulse of zero area produces no excitation at the end of the process. This situation is considerably altered when one goes off-resonance. There one can obtain a complete population transfer in a robust way, a feature that is reminiscent of an adiabatic passage. The mechanism for this, however, is quite different [1]. We study more general models with zero pulse areas and their properties. Also, the applicability of Dykhne-Davis-Pechukas theory to these models is demonstrated.

[1] G. S. Vasilev and N. V. Vitanov, [Phys. Rev. A **73**, 023416, \(2006\)](#).

[2] J. M. S. Lehto and K.-A. Suominen, [Phys. Scr. **91**, 013005, \(2016\)](#).