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Finite control of the populations of quantum systems on their dynamic groups. (English. Russian original) [Zbl 0932.93059](#)

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Summary: An analytical method based on dynamic symmetry is elaborated for solving the problem of finite control of quantum systems by external modulated electromagnetic fields. The method is helpful in computing the evolution matrix in explicit form, which is a representative of the corresponding dynamic group of the system. Through an example, the problem of finite control of the populations of two- and three-level atoms controlled by lasers with arbitrary admissible laws for the modulation of radiation parameters is solved.

MSC:

[93C95](#) Application models in control theory

[81V45](#) Atomic physics

[78A60](#) Lasers, masers, optical bistability, nonlinear optics

Keywords:

[dynamic symmetry](#); [control of quantum systems](#); [electromagnetic fields](#)