

1. Formulating of the problem for time dependent perturbed problem, write the Schrödinger equation and non-stationary wave function.
2. Equation for the time dependent expansion coefficients of the total wave function. Representation of the solution of this equation in the form of expansion into a series of perturbation theory approximations. The relationship of these coefficients and the probability of an interlevel transition.
3. Probability of interlevel transitions for first order of perturbation theory approximation. The case of harmonic external perturbation. The "golden rule" of quantum mechanics. Relationship between the "golden rule" and spectroscopy.
4. Calculation the probability of interlevel transition for harmonic oscillator and hydrogen atom in external electromagnetic wave by using "golden rule". Selection rules.