

## SPONTANEOUS EMISSION OF ATOMS DRESSED BY HIGH-INTENSITY LASER FIELDS

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A new approach to the study of spontaneous emission of a quantum system driven by a high intensity laser field is discussed.

This approach is based on the accurate consideration of quantum system interaction with the vacuum quantized field modes in the first order of perturbation theory while the intense laser field is considered classically beyond the perturbation theory. This allows one to take into account any-order stimulated processes triggered by the classical field.

The proposed approach is used to analyze a number of atomic processes in intense laser fields. Among them are:

- 1) high-order harmonic generation,
- 2) stabilization and reconstruction of the atomic spectrum,
- 3) laser-assisted bremsstrahlung and photorecombination.

The obtained data are compared with those obtained within the semiclassical approximation typically used for analyzing dynamics in strong laser fields.