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Many-mode Floquet theoretical approach for probing high harmonic generation in intense frequency-comb laser fields[1] SANG-KIL SON, SHIH-I CHU, University of Kansas — We extend the many-mode Floquet theorem (MMFT) [Chu and Telnov, Phys. Rep. **390**, 1 (2004)] for the investigation of high harmonic generation of a two-level system driven by intense frequency-comb laser fields. The frequency comb structure generated by a train of short laser pulses can be represented by a combination of the main frequency and the repetition frequency. The MMFT allows non-perturbative and accurate treatment of the interaction of a quantum system with the frequency comb laser fields. We observe that harmonic generation of the two-level system is dramatically enhanced by controlling the repetition frequency and the phase difference between pulses, due to simultaneous resonances.

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