

Theory of Harmonics Generation in Perforated Extended Gas Media Interacting with Two-Color Mid-IR Laser Fields

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Here we show the latest numerical results of the harmonics quasi-phase matching in periodic media interacted with two-color laser field forming by the fundamental and the second harmonic of the femtosecond laser source with variable wavelength (from near IR to a far IR). The problem has been investigated in the frame of the interference model of extended gas [1] and the non-perturbative theory of single-atom response [2].

The numerical calculations show that due to the QPM, the group of harmonics enhanced. The influence of the gas media parameters and the laser wavelength on the position of enhanced harmonics and its value is analyzed. The simple relations between the position of the enhanced QPM harmonics, laser wavelength and gas media parameters are introduced. Boundaries of the harmonics enhancement method are discussed.

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References

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