

Abstract Submitted
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Optimum conditions of high order harmonic generation with a gas jet¹ MUHAMMED SAYRAC, ALEXANDRE A. KOLOMENSKI, SUNILKUMAR ANUMULA, YAKUP BORAN, GAMZE KAYA, NECATI KAYA, HANS A. SCHUESSLER, Texas A&M University — We experimentally studied how high harmonic generation (HHG) with noble gases (argon, hydrogen) depends on pressure changes in the gas jet causing variations of the matching conditions and absorption. The pressure dependence of output of high harmonics was studied at moderate laser intensities $\sim 1.5 \times 10^{14}$ W/cm² in the interaction region. To enable measurement over a wide range of pressures we employed differential pumping with an additional chamber (~ 20 cm³ volume) enclosing the gas jet. By increasing the gas jet pressure up to the maximum of ~ 3 bar with Ar, and ~ 2.25 bar with H₂, we observed the increase of the HHs output until pressure in the jet reached optimum of ~ 0.5 bar for Ar, and ~ 2 bar for H₂, beyond which the output started decreasing.

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