Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Enhancement of extreme ultraviolet harmonics generated in gases using two orthogonally polarized laser fields GANJABOY BOLTAEV, RASHID GANEEV, NAVEED ABBASI, VYACHESLAV KIM, MAZHAR IQBAL, SHARJEEL KHAN, ALI ALNASER, American University of Sharjah — A two-color pump (TCP) scheme for extreme ultraviolet harmonics generation in gases is a route to generate even and odd harmonics. Here we analyze the high-order harmonics generation (HHG) in atomic and molecular gases using 1 mm long gas jet. The dynamics of the odd and even harmonic yields was studied for orthogonally polarized fields of fundamental radiation and second harmonic of 1030 nm, 35 fs 50 kHz pulses. We analyzed the variations of the Cooper minima in the HHG spectra in the case of the single color pump (SCP) of argon gas jet. The control of depth and width of Cooper minima in argon gas can be realized by changing the jet position with regard to the focal plane of focusing lens. In the meantime, the two-color pump scheme of HHG in gases can also be considered as a method to control the Cooper minima in HHG spectra. We compared SCP and TCP HHG in the case of Ar, O_2, and N_2. The relative efficiencies of HHG were analyzed depending on the thickness of the barium borate crystal used for second harmonic generation.

Ganjaboy Boltaev
American University of Sharjah

Date submitted: 30 Jan 2020 Electronic form version 1.4