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Correlated Terahertz and High Harmonic Generation from Aligned Nitrogen Molecules YINDONG HUANG, CHAO MENG, XIAOWEI WANG, ZHIHUI LV, DONGWEN ZHANG, WENBO CHEN, JING ZHAO, JIANMIN YUAN, ZENGXIU ZHAO, National University of Defense Technology — When laser beams are focused on atoms and molecules, wide spectral range of photons can be radiated from the source. In the region of high energy, high harmonic generation (HHG), covering tens to hundreds electron volts, emit within the attosecond timescale. In the low energy region, terahertz wave generation (TWG) can also be generated. Synchronizing TWG with HHG is to take snapshot of the electronic dynamics with time-scale spanning over 6 orders of magnitudes. In this abstract, we report the joint measurements on TWG and HHG from pre-aligned molecules. By calibrating the angular ionization rates with the alignment dependent TWG, we reconstruct the photoionization cross section (PICS) of nitrogen in one run of experiment. The measured PICS is found to be consistent with theoretical predications, although some discrepancies exist. This all-optical method provides a new alternative for investigating molecular structures(Yindong Huang, et.al , Phys. Rev. Lett., 115, 123002, 2015).

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