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Time-resolved photoionization of He droplets using high-harmonic OLEG KORNILOV, Lawrence Berkeley Laboratory, UC Berkeley, OLIVER GESSNER, MATHEW LEONARD, STEPHEN LEONE, DANIEL NEUMARK, CHUN-TE PENG, CHIA WANG — Helium droplets are widely used as nanocontainers for matrix-isolated rotational, vibrational and electronic spectroscopy. Their superfluid nature and low temperatures (0.37K) provide gentle environment for embedded atoms, molecules and complexes. However, most of the traditional spectroscopic techniques are not efficient for pure droplets, because of the very high energies of electronic transitions. One of the recent studies [1] conducted using synchrotron light demonstrated very interesting phenomena in photoionization of pure He droplets. It has been shown that below the threshold for He atom photoionization essentially zero kinetic energy electrons are emitted independent of the wavelength of the photoionizing radiation. In this contribution a new experiment will be presented utilizing a novel source of VUV radiation based on the high-harmonic generation. In this process femtosecond pulses of radiation are created, which will be used in a VUV-pump/IR-probe scheme to study dynamics of photoionization of He droplets. First results towards the time-dependent photoelectron spectra will be presented. [1] D. Peterka *et al*, Phys. Rev. Lett. **91**, 043401 (2003)

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