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Toward Imaging of Small Objects with XUV Radiation
MUHAMMED SAYRAC, ALEXANDRE A. KOLOMENSKI, YAKUP BORAN, HANS SCHUESSLER, Texas AM University — The coherent diffraction imaging (CDI) technique has the potential to capture high resolution images of nano- or micron-sized structures when using XUV radiation obtained by high harmonic radiation (HHG) process. When a small object is exposed to XUV radiation, a diffraction pattern of the object is created. The advances in the coherent HHG enable obtaining photon flux sufficient for XUV imaging [1]. The diffractive imaging technique from coherent table top XUV beams have made possible nanometer-scale resolution imaging by replacing the imaging optics with a computer reconstruction algorithm [2]. In this study, we present our initial work on diffractive imaging using a tabletop XUV source. The initial investigation of imaging of a micron-sized mesh with an optimized HHG source [3] is demonstrated. This work was supported in part by the Robert A. Welch Foundation Grant No. A1546 and the Qatar Foundation under the grant NPRP 8-735-1-154. M. Sayrac acknowledges support from the Ministry of National Education of the Republic of Turkey. [1] G. Vaschenko, et al. Optics Letters 31 (2006). [2] C. Song, et al. Physical Review B 75 (2007). [3] M. Sayrac, et al. Rev. Sci. Instrum. 86 (2015).

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