Abstract Submitted
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In situ **measurements of three-dimensional ion densities in focused femtosecond radiation.**[1] JAMES STROHABER, CORNELIS UITERWAAL, University of Nebraska Lincoln — In conventional time-of-flight ion mass spectrometry, ionized targets are created from a distribution of intensities in the focus. In general, it is difficult to distinguish between ions created at these different intensities. Consequently, the usual course of action is to integrate ions over the entire focal region. The inevitable result of volumetric weighting is the loss of information (the volume effect). We circumvent this problem by collecting ions from a well-defined three-dimensional region of space (3 um by 10 um in the transverse direction) where the intensity is essentially constant[1]. What we have realized for use in intense field ionization experiments is a photodynamical test tube. Experimental results of spatially resolved ion densities of xenon using laser radiation having a central wavelength of 800 nm and pulse duration of 50 fs will be discussed. In addition, we present some preliminary data on the photoionization and photofragmentation of aryl halide molecules [1] J. Strohaber and C. J. G. J. Uiterwaal, Phys. Rev. Lett. **100,** 023002 (2008).

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