Abstract Submitted
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Circularly-Polarized Photo-Fragmentation of Molecular Hydrogen[1] T.J. GAY, U. of Nebraska, J.E. FURST, U. of Newcastle-Ourimbah, D.H. JAECKS, J. MACHACEK, U. of Nebraska, K.W. MCLAUGHLIN, Loras College, O. YENEN, U. of Nebraska — The role of angular momentum in molecular photoionization/dissociation is best probed using circularly-polarized ionizing radiation. We have measured the Balmer-beta (486 nm) fluorescence from hydrogen atoms following photodissociation of hydrogen molecules by circularly-polarized light with energy ranging from 26 eV to 50 eV. Even though the photodissociation events are prompt in these dissociation channels (i.e., do not proceed via pre-dissociative states), there is significant oscillatory structure with incident photon energy in both the linear and circular polarization of the 486 nm fluorescence. No equivalent structure is observed in the H(n=4) total intensity measurements. Our results for the latter are in significant disagreement with earlier measurements [1]. We find evidence that the photodissociated H(n=4) atoms have an orientation opposite that of the incident light near the threshold for photodissociation, at ∼26eV. This work was done at the Advanced Light Source, Lawrence Berkeley Laboratory. [1] M.Glass-Maujean, J.Chem.Phys.**89**, 2839 (1988).

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