

Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Double Photoionization of Molecular Nitrogen¹ RALF WEHLITZ, TIMOTHY HARTMAN, Synchrotron Radiation Center, Univ. of Wisconsin-Madison — We have investigated the double photoionization process of molecular nitrogen using monochromatized synchrotron radiation and ion time-of-flight spectrometry. Although the doubly charged N₂ parent ions have the same mass-to-charge ratio as the singly charged atomic-nitrogen ions, both species exhibit a different width in the ion time-of-flight spectrum because the molecular ions do not move (except for the thermal motion) in contrast to the atomic fragment ions. Due to the break-up motion of the atomic nitrogen ions, the corresponding peak appears as a broad line in the spectrum whereas the molecular ions show up as a narrow peak. The different peak widths allowed us to separate both processes and enabled us to derive the molecular double-to-single photoionization ratio of N₂ over a large photon energy range.

¹The SRC is supported by NSF Grant No. DMR-0537588.

Ralf Wehlitz
Synchrotron Radiation Center, Univ. of Wisconsin-Madison

Date submitted: 19 Jan 2010

Electronic form version 1.4