

Abstract Submitted  
for the DAMOP05 Meeting of  
The American Physical Society

**Nondipole Photoionization Parameters of Atomic Mercury** T. BANERJEE, P. C. DESHMUKH, Indian Institute of Technology-Madras, S. T. MANSON, Georgia State University — Over the past few years, photoionization parameters have been found to be affected by nondipole terms at much lower energies than was known earlier [1,2]. The primary motivation for the present investigation is to study the effect of interchannel coupling involving E1 and E2 photoionization channels from subshells with large orbital angular momentum ( $l > 2$ ). In an extension of earlier work [3], the nondipole photoelectron angular distribution asymmetry parameters  $\gamma$  and  $\delta$  from the  $6s$  and  $5d$  subshells of atomic mercury have been obtained in the energy range from the respective thresholds up to 45 au. Relativistic-Random-Phase Approximation (RRPA) theory at various levels of truncation of the RRPA was used which allowed us to pinpoint the effects of interchannel coupling. The role of interchannel coupling between the  $6s$  and  $5d$  photoionization channels and the  $4f$  channels in both the dipole (E1) and the quadrupole (E2) manifolds has been detailed and has been found to be of considerable significance. This work was supported by DST and NSF. [1] A. Derevianko, W. R. Johnson and K. T. Cheng, *At. Data Nucl. Data Tables* **73**, 153 (1999). [2] O. Hemmers, *et al*, *Phys. Rev. Lett.* **91**, 053002 (2003); **93**, 11301 (2004). [3] P. C. Deshmukh, *Radiation Phys. and Chem.* **70**, 515 (2004) and references therein.

S. T. Manson  
Georgia State university

Date submitted: 28 Jan 2005

Electronic form version 1.4