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Electron correlation effects in time delay in photoionization process: Mercury AARTHI GANESAN, Jain University, Bangalore, SOUMYAJIT SAHA, ANKUR MANDAL, NERENDA NATH DUTTA, Indian Institute of Technology-Madras, P.C. DESHMUKH, Jain University, Bangalore and Indian Institute of Technology-Madras, S.T. MANSON, Georgia State University — Relativistic and correlation affect time delay in the photoionization process [1-5]. Mercury, a heavy atom, requires the inclusion of both correlation and relativity. Time delay [6] in mercury is studied at various levels of approximation: (a) Relativistic Random Phase Approximation (RRPA) [8], (b) a modified version RRPA to include relaxation effects [9] (c) the relativistic multiconfiguration Tamm Dancoff approximation [10] to and (d) many-body perturbation theory [11]. Inclusion of interchannel coupling from the 5d subshell on the relativistic 6s channels reduces the time delay near the Cooper minima, along with the shift of the Cooper minima towards higher energy. A considerable change in time delay is expected due to the influence of relaxation, CI and polarization effects.

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