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Wigner time delay in photodetachment of negative ions S. SAHA, P. C. DESHMUKH, IIT-Madras, J. JOSE, IIT-Patna, A. S. KKEIFETS, Australian National U., S. T. MANSON, Georgia State U. — In recent years, there has been much interest in studies on Wigner time delay [1] in atomic photoionization using various experimental techniques and theoretical methodologies [2]. In the present work, we report time delay in the photodetachment of negative ions using the relativistic-random-phase approximation (RRPA), which includes relativistic and important correlation effects [3,4]. Time delay is obtained as energy derivative of phase of the photodetachment complex transition amplitude. We investigate the time delay in the dipole n$p \rightarrow \varepsilon d$ channels in the photodetachment of F^- and Cl^-, and in n$f \rightarrow \varepsilon g$channels in the photodetachment of Tm^-. In photodetachment of the negative ions, the photoelectron escapes in the field of the neutral atom and thus does not experience the nuclear Coulomb field; hence the phase is devoid of the Coulomb component. The systems chosen are well suited to examine the sensitivity of the photodetachment time delay to the centrifugal potential [5]. The ions chosen have closed shells, and thus amenable to the RPA. Work supported by DOE, Office of Chemical Sciences, DST (India), and the Australian Research Council. [1] E. P. Wigner Phys. Rev. **98** 145(1955); [2] R. Pazourek, S. Nagele and J. Burgdörfer, Rev. Mod. Phys. **87**, 765 (2015); [3] W. R. Johnson *et. al*, Phys. Rev. A **25**, 337 (1982); [4] W. R. Johnson, C. D. Lin, Phys. Rev. A **20**, 964 (1979); [5] A. R. P. Rau and U. Fano, Phys. Rev. **167**, 7 (1968).

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