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Time delay in photoionization near Cooper minima JOBIN JOSE, SINDHU KANNUR, ASHISH KUMAR, HARI R. VARMA, IIT-Mandi, PRANAWA C. DESHMUKH, IIT-Madras, STEVEN T. MANSON, Georgia State University —
The connection between the energy dependence of the scattering phase shift and time delay is known [1]. With the developments of techniques in attosecond physics, it has become possible to measure the time delay between photoemission from different subshells [2, 3]. There have been several nonrelativistic calculations of the time delay between photoelectrons from different subshells [4, 5] that confirmed the need to include many-electron correlations. In the present work, the RRPA [6], which includes both relativity and many of the important electron correlation effects, is employed to calculate the time delay between photoelectrons from the valance ns, $np_{3/2}$ and $np_{1/2}$ subshells of noble gas atoms in the dipole approximation, and particularly dramatic variations occur in the vicinity of Cooper minimum [7] owing to the rapid variation of the scattering phase shift in the vicinity of Cooper minima, including effects that occur only due to relativistic splittings. These effects appear to be amenable to experimental investigation.

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Steven T. Manson
Georgia State University

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