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Partial time delays in elastic electron scattering by rectangular potential well with arising discrete levels. MIRON AMUSIA, Hebrew Univ of Jerusalem; Ioffe Phys.-Tech. Institute, ARKADIY BALTENKOV, Arifov Institute of Ion-Plasma and Laser Technologies, IGOR WOICIECHOWSKI, Alderson Broaddus University — We have investigated the partial Eisenbud-Wigner-Smith time delays for slow electrons scattered by rectangular attractive potentials as functions of the potential parameters, such as the potential well depth and the potential radius. We have focused our consideration on the vicinities of the parameters of the potential that are close to their critical values. The critical values are those, at which the bound states with zero binding energy appear in the potential well. The evaluations are performed mainly analytically. Specifically, we have considered potential depths U and potential radii R, in which the potential supports several discrete s-, p- and d-levels. Despite the potential simplicity, the presented analysis makes it possible to observe some specific features in the time delay behavior that have general character. It should be emphasized that although the investigated features of the considered-time delays were obtained for the simple rectangular potential well, it is not difficult to generalize the consideration for any short-range potential, obtaining qualitatively the same results.

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