

The electron-impact double ionization of helium: dynamical variational treatment

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Based on Hulthén-Kohn dynamical variational principle the effective charge seen by the ejected electrons are determined for a certain type of trial wave functions. Validity of the elaborated approach is assessed by calculating fully differential cross section (FDCS) for electron-impact double ionization of helium. The relatively small momentum transfer ($q=0.5$ a.u.) at 2keV impact energy and equal energy sharing between ejected electrons (5eV, 10eV, 20eV) provides the reasonable kinematical conditions for application of the First Born Approximation (FBA). The calculated five fold differential cross section (FDCS) is in reasonable agreement with the corresponding experimental observation and with some sophisticated theoretical calculations.