

Analytic formula for charged particle impact ionization cross-section

Mohammed Sahlaoui, Mammar Bouamoud

Abstract :

We derive an analytical formula for the first Born approximation amplitude for the ionization of general neutral atomic targets by charged particle impact. An orthogonalized Coulomb wave function is used to describe the ejected electron. The triple differential cross-section is written in a computationally efficient analytic form.

Keywords :

IONIZATION; BORN approximation; WAVE functions; ELECTRONS; STOPPING power (Nuclear physics); ASTROPHYSICS; RADIOBIOLOGY.

Journal Title / Revue : CANADIAN JOURNAL OF PHYSICS, ISSN : 0008-4204, DOI : 10.1139/P10-088, Issue : 12, Volume : 88, pp. 905-910, December 2010.