INDEPENDENT ELECTRON APPROXIMATION METHOD FOR MULTIELECTRON PROCESS IN HIGHLY CHARGED FAST ION ATOM COLLISONS

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The independent electron approximation (IEA) is extended here for highly charged ions in the region where perturbation theory is not applied. An unitarization method for one electron ionization probability is used to approximate the probability functions.

Experimental data for multiple ionization of gas targets by fast highly charged ions are used to predict the recoil charge state distributions, after electron capture process by the projectile. In this new method, good agreement between the IEA calculations and the experimental data is achieved for projectile charges as high as 48 at 1.4 MeV/u energy range. Scaling low, for small impact parameter ionization probability as a function of charge state and energy, is given.

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