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Relativistic calculations of pair creation probabilities in low-energy heavy-ion collisions

Collisions of highly charged ions allow to study relativistic and quantum electrodynamic effects. If the total charge of the colliding nuclei is larger than Zc = 173, the ground state of the combined quasimolecular system should dive into the negative-energy Dirac continuum. Investigation of the processes accompanying such collisions can gain insight into the detection of the diving phenomenon. Relativistic calculations of the differential electron-positron pair creation probabilities in the collision of two uranium nuclei at the energy close to the Coulomb barrier are performed. Two methods of differential probability evaluation are compared. One of them uses an exact wave function of continuum, while another one uses a wave function of discretized continuum in a finite basis.

Invited Talk (yes/no)?

no

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