Electron capture and ionization in proton collisions with helium[1] ALISHER KADYROV, SHUKHRAT ALLADUSTOV, ILKHOM ABDURAKHMANOV, IGOR BRAY, Curtin University, KLAUS BARTSCHAT, Drake University — We have developed a two-center convergent close-coupling approach to proton collisions with helium including electron capture [1]. The target is treated as a three-body system, where correlations between the electrons are taken into account. We use a frozen-core approximation, where one of the electrons remains in the He^+ 1s orbital. The wave-packet approach is used to discretize the continuum of the target and the hydrogen atom formed after electron capture by the projectile. We present electron-capture and single- and double-ionization cross sections for protons incident on He in the ground state in the energy range from 15 keV to 1 MeV. In addition, the fully differential cross sections for electrons ejected with energy of 5.4 eV at 75 keV incident proton energy and the doubly differential cross sections for electrons ejected with energies up to 65 eV at intermediate projectile energies will also be presented. Results are convergent in terms of the number of the included pseudostates and are in fairly good agreement with the available experimental data. [1] Sh. U. Alladustov et al. Phys. Rev. A 99, 052706 (2019).

Alisher Kadyrov
Curtin University

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