

Abstract Submitted  
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**Absolute total cross sections of methane molecules by fast antiproton and proton impact** PAVEL N. TEREKHIN, Technical University of Kaiserslautern, Kaiserslautern, Germany; NRC Kurchatov Institute, Moscow, Russia, MICHELE A. QUINTO, Instituto de Fisica Rosario (CONICET-UNR), Rosario, Argentina, JUAN M. MONTI, OMAR A. FOJON, ROBERTO D. RIVAROLA, Instituto de Fisica Rosario (CONICET-UNR), Rosario, Argentina; Universidad Nacional de Rosario, Rosario, Argentina — A detailed investigation of multiple electron processes (single and multiple ionization, single capture, transfer-ionization) of methane molecules is presented for antiproton and proton impact at intermediate and high collision energies. A prior-version of the three-body continuum distorted wave-eikonal initial state approximation within the independent electron approximation is used to calculate exclusive transition probabilities as a function of the impact parameter and pure and net absolute cross sections for the considered collisions. An exclusive statistical trinomial distribution is employed to describe multiple-electron processes. The results are compared with other theoretical calculations and available experimental data. The developed method for calculation of one-electron ionization and capture probabilities allows to study multiple electron processes for charged particles passing through the matter. It also can be used to investigate molecular fragmentation mechanisms.

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