

Abstract Submitted
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A screened independent atom model for the description of ion collisions from atomic and molecular clusters¹ TOM KIRCHNER, MARKO HORBATSCH, York University, HANS JÜRGEN LÜDDE, Goethe University Frankfurt — The recently introduced independent atom model (IAM) pixel counting method (PCM) is used to calculate electron removal cross sections for proton collisions from carbon, water, and argon clusters, i.e., for target species that range from covalently bound to van der Waals systems. The IAM-PCM is based on a geometric interpretation of the cross section of a multi-center Coulomb target as a sum of overlapping atomic cross sections [1]. The atomic calculations are carried out using the two-center basis generator method on the level of a no-response independent electron description. The screening coefficients in the IAM-PCM cross section formula are obtained by counting the visible pixels that represent a given atom in the structure of overlapping circular disks which is obtained when superimposing the atomic cross sections for a given collision geometry. Results for net electron transfer and ionization will be presented for impact energies ranging from 10 to 1000 keV. It will be demonstrated that the cross sections for each cluster species $(X)_n$ show a characteristic dependence on n . [1] H.J. Lüdde *et al.*, Eur. Phys. J. D **70**, 82 (2016).

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