Abstract Submitted
for the GEC16 Meeting of
The American Physical Society

Differential cross sections for atomic ionization determined through the Bohm's velocity field. JUAN M RANDAZZO, Centro Atomico Bariloche, Argentina, LORENZO UGO ANCARANI, Universite de Lorraine, France, FLAVIO D COLAVECCHIA, Centro Atomico Bariloche, Argentina — Differential cross sections for atomic ionization are usually evaluated via the scattering amplitude defined as the transition matrix element between the initial and final states of the collision. R. Peterkop proposed an alternative approach – known as flux formula - based on the relation linking the cross section to the ratio between the incident electronic flux and the emitted post-collisional one, through the asymptotic outgoing behavior of the scattering wave function. The flux formula was seen to fail for very unequal energy sharing when evaluating Single Differential Cross Sections (SDCSs) for the s-wave electron-hydrogen problem [1]. The procedure was thereafter abandoned. However, an alternative way of defining the electrons' local momenta by using the Bohm's velocity field was recently proposed [2], and it was found that SDCS results with a new definition of the energy fraction are well behaved on the whole range. In this contribution, we apply the modified quantum flux approach with local momenta to the electron impact ionization of hydrogen by considering the problem in its whole dimensionality, i.e., not only the s-wave contribution. We compare triple differential cross section results with other theoretical and experimental data, and this for several incident energies. [1] Baertschy M et al (1999) Phys. Rev. A 60, R13. [2] Randazzo J M and Ancarani L U (2015) Phys. Rev. A 82, 062706.

Juan M Randazzo
Centro Atomico Bariloche, Argentina

Date submitted: 10 Jun 2016 Electronic form version 1.4