

Abstract Submitted  
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**On cutting off variable for Coulomb collision in plasma.**<sup>1</sup> DING LI, YONGBIN CHANG, Chinese Academy of Sciences — The correct cutting off variable for Coulomb collision in plasma is established in this presentation. The traditional cutting off variables, such as scattering angle  $\theta$  and impact parameter  $b$ , are merely partial cutting off variables due to lacking the necessary cutting off on relative speed  $g$  of two particles. The correct cutting off variable should be introduced as velocity change before and after collision, which can correctly describe the singularity of the integrals. The difference of the partial cutting off variables and the correct one is compared through their contour lines in the  $b - g$  plane here  $b$  is the impact parameter. With the correct cutting off, many physical results become more simplified and structured for Coulomb collisions. These physical results include the arbitrary higher order of Fokker-Planck coefficients, transition moments, and energy transfer rates for Coulomb collisions. All the physical results depending on velocity are expressed by a set of functions which associates with incomplete gamma functions. In particular, the so-called Coulomb logarithm  $\ln\Lambda$  should be replaced by the exact form – the zeroth order incomplete Gamma function.

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