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Effects of Angular Scattering on Ion Velocity Distribution Functions. HUIHUI WANG, University of Electronic Science and Technology of China, VLADIMIR SUKHOMLINOV, St. Petersburg State University, IGOR KAGANOVICH, Princeton Plasma Physics Laboratory, ALEXANDER MUSTAFAEV, National Mineral-Resource University — An approximation model for total elastic and charge exchange ion-atom angular differential scattering cross sections is developed for simulations of the ion velocity distribution functions (IVDF) [1-2], which is validated by the experiment data of mobility and diffusion. IVDFs are simulated using the developed model and compared with recently published experimental data [3-4]. The IVDFs obtained with this model are compared to that from two other conventional models of less accurate differential cross sections [5-6]. The simulation results show the necessity to take into account the accurate differential cross sections, especially for strong E/N . The study reveals that IVDF cannot be separated into product of two independent IVDFs in the transverse and parallel to the electric field directions due to the significant effect of scattering. [1-2] H. Wang, et al., Two Papers Submitted to "Plasma Sources Sci. Technol." (2016) [3] Mustafaev A S, et al. *Technical Physics* **60** 1778 (2015) [4] Sukhomlinov V, et al. *42nd EPS Conference on Plasma Physics* P5.168 (2015) [5] Phelps A V *Journal of Applied Physics* **76** 747 (1994) [6] Lampe M, et al. *Physics of Plasmas* **19** 113703 (2012).

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