Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Evaluation of electron collision cross sections using a Boltzmann equation solver.[1] DEUK-CHUL KWON, MI-YOUNG SONG, National Fusion Research Institute, HYO-CHANG LEE, Korea Research Institute of Standards and Science — The swarm analysis is widely used for evaluating or predicting the electron collision cross sections by comparing the calculated electron mobility using a Boltzmann equation solver and experimental results. In this work, electron collision cross sections were evaluated by comparing the electron energy probability functions (EEPFs) calculated using cross section data with the EEPFs measured with a Langmuir probe. In order to calculate the EEPFs, the Fokker-Planck equation is numerically solved for inductively coupled plasma sources. The electron collision data for nitrogen, oxygen, and argon plasma were evaluated, and the dependence of the EEPFs on the electron heating model was also investigated.

[1]This research was supported by the National Research Council of Science Technology (NST) grant by the Korea government (MSIP) (No. CAP-17-02-NFRI)

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Date submitted: 05 Jun 2019 Electronic form version 1.4