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Investigation of adaptive signal processing methods for denoised I-V curve of Langmuir probe JUNG YEOL LEE, MOON-KI HAN, HO-JUN LEE, HAE JUNE LEE, Department of Electrical Engineering, Pusan National University, Busan — It is an important issue to obtain a clear second derivative of Langmuir probe I-V curve which involves the electron energy distribution function. Therefore, noise suppressions against random walk of charges are required in the experimental data. Proper numerical methods including fitting, digital smoothing, digital filtering with window function should be used to remove each types of noise to determine electron energy distribution. The calculation of electron energy distributions demands sequential algorithm of several numerical methods to reduce the noise in I-V curve. In this presentation, a new noise suppression method is suggested to achieve advanced Langmuir probe diagnostics. Combined utilization of nonlinear curve fitting and low pass filter with window function shows more precise results than the utilization of smoothing only. Therefore, results including noise analysis algorithm give new guideline of probe diagnostics.

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