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Evolution of electron energy distribution and its diagnostics on high density electron cyclotron resonance hydrogen plasma LEKHA NATH MISHRA, ASHILD FREDRIKSEN, University of Tromsø — The high density hydrogen plasma of the Menja device is produced by means of a 2.45 GHz electron cyclotron resonance source at 500 W microwave power. Experiments are performed within the pressure range 10^{-5} – 10^{-4} mbar with a gas flow rate 1.5 – 10 sccm. The key parameters of the plasma are studied with the electric probe measurement technique. Thus generated plasma is characterized in terms of ion saturation current, floating potential, plasma potential, electron temperature and plasma density. However, to obtain information on electron energies and their interaction with plasma, it is also necessary to characterize the electron energy distributions (EEDs). To derive the EEDs, the 2nd derivative of the current characteristics of a swept probe must be obtained. For this purpose, an analogue differentiation circuit was built and tested. We report here the evolution of electron energy distributions and its diagnostics in Menja by this method.

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