

HTPD 2018



Contribution ID : 79

Type : not specified

12.4 Development of High-speed VUV spectroscopy using modified Seya-Namioka monochromator and CEM detector in the HL-2A tokamak

Wednesday, 18 April 2018 20:30 (120)

A 20cm normal incidence vacuum ultraviolet (VUV) monochromator with fast time response has been developed for measuring edge impurity line emissions in the wavelength range of 300-2000Å on HL-2A tokamak. A 1200 grooves/mm concave holographic grating is adopted to the monochromator with wavelength dispersion of 4nm/mm. The effective aperture of the monochromator is f/4.5. A CEM is used as a detector and an excellent time resolution of 17µs is realized in its first performance. Wavelength calibration of the system has been done by using a hollow cathode light source with helium and argon gas in the laboratory. High S/N signals have been obtained by significantly reducing the stray light with blackened the inner surface of the vacuum chamber of the monochromator. Preliminary results by measuring the line emissions from HL-2A plasmas have been presented.

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Session Classification : Session #12, Wednesday Night Poster Session