



Contribution ID: 91 Contribution code: S08-PGDP-200

Type: **Poster presentation**

Experimental study of Ne II spectral lines shapes in the cathode sheath of an abnormal glow discharge

Monday, 29 August 2022 19:29 (1 minute)

We report results of an experimental study of shapes of Ne II 369.421 nm, Ne II 371.308 nm, and Ne II 372.711 nm lines in the cathode sheath (CS) region of an abnormal glow discharge in pure neon. The experimental profiles were studied using optical emission spectroscopy (OES). Several strong ionic neon lines from the near UV region exhibit extensively broadened wings of their spectral profiles. We used Ne I 520.390 nm spectral line to measure the strength of the electric field and draw attention to the possibility of determining the electric field strength in CS from one particular parameter of the complex line profiles.

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Session Classification: Poster session

Track Classification: Scientific Sections: S08 Plasma and Gas-Discharge Physics