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First operational results of IRISC assessed via optical emission spectroscopy

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Internal Radio-frequency Ion Source for Cyclotrons (IRISC) is a 2.45 GHz internal H^- ion source designed for compact cyclotron applications. During its initial operational campaign, optical emission spectroscopy (OES) was employed to investigate the influence of key operational parameters —specifically, RF power and gas flow rate —on the generated plasma. Spectral analysis focused on the Balmer series emission lines and the Fulcher-α molecular band. The experimental results exhibit a clear correlation between operational parameters and spectral emission characteristics, demonstrating the suitability of the OES system for obtaining preliminary estimates of plasma parameters in IRISC.

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