

Gyro Line Observations in Incoherent Scatter Spectra Using Arecibo ISR

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Gyro line is a pair of resonance lines present in the incoherent scatter spectra in the presence of a magnetic field. These lines are difficult to detect. We conducted experiments to observe the gyro line using the Arecibo Incoherent Scatter Radar during August 2004 and December 2005. We detected the gyro lines during day time and night time with an integration time as short as 3 minutes. Observations during both periods are in good agreement with the theory of electrostatic fluctuations in a magnetized plasma. The results also raise some interesting questions regarding the magnitude of this pair of resonance lines and the cause of its occurrence. We present the results and try to explore these questions in this document.