

Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

Progresses on resonance hairpin probe SHANTANU KARKARI, Institute for Plasma Research, Bhat, Gandhinagar, NISHANT SIRSE, GURUSHARAN SINGH GOGNA, MILES TURNER, Dublin City University, Ireland — This paper briefly reviews the recent developments on resonance hairpin probe as a diagnostic tool for characterizing low temperature electro-negative and strongly magnetized plasmas. As well known the hairpin is capable of measuring absolute values of electron density provided the plasma surrounding the pins is homogeneous and free from adjoining dielectrics. However this is far from reality because of several factors that influence the actual resonance condition such as the proximity of the probes ceramic support and the presence of sheaths around the resonator pins all contributing to the effective permittivity observed by the hairpin. On the other hand dual resonance frequency has been observed in magnetized plasma. The hairpin probe was also applied in conjunction with pulsed laser photo-detachment for measuring time-resolve negative ion density in pulsed-dc magnetron discharge. Recently an independent method based on a pulsed hairpin probe is developed for quantifying electronegative plasma parameters. Using this method both negative ion density and its temperature has been estimated. The results are found to be in good qualitative agreement with those obtained from pulsed photo-detachment technique.

Shantanu Karkari
Institute for Plasma Research, Bhat, Gandhinagar

Date submitted: 13 Jun 2013

Electronic form version 1.4