

## Plasma Diagnostics by Multipole Resonance Probe

*Monday, 21 May 2018 18:30 (15 minutes)*

Multipole Resonance Probe (MRP) can be used to determine plasma parameters including plasma density. This project is divided into 2 parts. The first involves simulation of dissipation power by using MATLAB analytical program. The second part is the construction of MRP. The locally made probe is used to characterize DC plasma at the electrical input power of 0, 24, 31.35, 60 and 91.74 watts and a pressure of 0.6 millibars. The distance between the plasma source electrodes is 7 centimeters. The tested probe is connected with a Network Analyzer. The peak of a plot between dissipation power versus frequency can be analyzed to yield the plasma density. It has been found that our simulation process yield the highest dissipated energy transfer frequency that agree well with the anticipated result from the model. The multipole probe results of our DC plasma source indicate increasing plasma density with increasing electrical power.

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**Session Classification:** A04: Plasma and Nuclear Fusion (Poster)

**Track Classification:** Plasma and Ion Physics, Nuclear and Radiation Physics