ICRF Actuator Development for Alcator C-Mod and ADX


MIT Plasma Science and Fusion Center

Summary

Field-aligned ICRF antenna, with high Z metallic PFCs and high plasma performance

ICRF Impurity Sources and Contamination

Load Tolerance

Determination of Effective Impedance of Plasma Discharges

One of the fundamental challenges for ICRF antenna scaling is a clean and reliable plasma discharges.

To reduce electrical load variations, the Alcator C-Mod team developed a load monitoring system to control the plasma.

Local Antenna Impurity Source is Eliminated for FA Antenna

Field-Aligned Antenna Impedance and Location

Field-Aligned Antenna Impedance Matrix 

Field-Aligned Antenna Impedance Matrix is Characterized by Sensitivity

Field-Aligned Antenna Impedance is Obtained using Field-Aligned Antenna

Field-Aligned Antenna Impedance is an Effective Impedance

Field-Aligned Antenna Impedance is Obtained using Local Impedance Correction

Antenna Impedance Matrix

\[ \begin{bmatrix} Z_{11} & Z_{12} \\ Z_{21} & Z_{22} \end{bmatrix} \]

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