

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Fast Ferrite ICRF Matching System in Alcator C-Mod¹ YIJUN LIN, A. BINUS, A. PARISOT, S. WUKITCH — The loading of an ICRF antenna can vary significantly in a plasma discharge due to L-H mode transitions, the occurrence of edge localized modes and changes in plasma shape. The matching systems currently used in Alcator C-Mod have fixed positions during a discharge, which are often inadequate to accommodate all the loading variations. To avoid excessive VSWR to the transmitters, the RF power has to be shut off when mismatch happens. This imposes limitations on the range of plasma parameters that the antennas can couple effectively. In order to make ICRF operation in C-Mod more robust and flexible, a double-stub fast ferrite matching system has recently been developed. The magnetic permeability of the ferrite material can be changed by varying a magnetic field, generated by coils. As a result, the equivalent electrical length of the stubs can be controlled dynamically in a plasma discharge. The coil current control is carried out through a digital feedback system, which computes the outputs from real-time impedance signals. Simulations have shown that this fast ferrite system will allow a good loading match under most plasma conditions in Alcator C-Mod. Bench test results of the system will be presented.

¹Work supported by US DoE Coop. Agreement No. DE-FC02-99ER54512.

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Date submitted: 20 Jul 2006

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