

Minority Ion Measurements during ICRF Experiments in Alcator C-Mod*

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ICRF is the primary auxiliary heating in C-Mod where both H or ³He minority and mode conversion regimes are utilized. For transport analysis, the power deposition profile is critical and measuring the resulting fast ion distribution provides a direct means to constrain and validate ICRF simulations used to calculate power deposition. In mode conversion, measurement of the minority ion density, temperature, and velocity profiles is critical for the wave physics and may provide some insight to the fundamental physics of flow drive. Using active charge exchange, the He II 4686Å or H 6563Å line is observed with a high throughput spectrometer via 30 poloidal and toroidal views which look from the core to the edge. The greatest progress has been made in D(³He) (minority in parentheses) because of better S/N than for D(H) due largely to the bright ambient D emission. Initial results from fast ion detection, minority ion density, temperature, and velocity profiles will be reported for D(³He) discharges. Diagnostic design for H minority measurements will also be presented.

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