

Abstract Submitted
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Investigating Highly Energetic Ions in the Alcator C-Mod Tokamak¹ A. BADER, J. SEARS, P. BONOLI, R. GRANETZ, R. PARKER, S. WUKITCH, Massachusetts Institute of Technology, L. BERRY, E.F. JAEGER, Oak Ridge National Laboratory, R.W. HARVEY, CompX Co — Alcator C-Mod uses ICRF power for the bulk auxiliary heating and relies primarily on hydrogen minority heating scenarios. Measuring the hydrogen ion distribution provides an opportunity to validate ICRF simulations that include a full-wave field solver with a non-Maxwellian ion response (AORSA), and a zero-orbit width Fokker Planck code (CQL3D). The Compact Neutral Particle Analyzer (CNPA) is a diagnostic that measures this fast ion distribution function in C-Mod. The diagnostic has been upgraded to allow extended measurements in both energy and space. Results show a significant presence of highly energetic (> 500 keV) ions. In this talk, results from the diagnostic will be presented. The fast ion tail temperature varies inversely with plasma density, exhibits depressed high energy tails at low plasma current likely due to orbit loss, and has no clear dependence on ICRF power. The measured distributions allow for an assessment of integrated simulations. Comparisons of measurements with predictions of a synthetic diagnostic will also be shown.

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