

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Two-dimensional radiated power diagnostics for Alcator C-Mod¹

MATTHEW REINKE, NED MUCIC, IAN HUTCHINSON, RUI VIEIRA, MIT Plasma Science and Fusion Center — Upgrades to Alcator C-Mod's radiated power diagnostics are presented. These tools, currently under construction, will be deployed in FY2007 to study the radial and poloidal distribution of photon emissivity in a variety of C-Mod plasmas. Commonly utilized AXUV diodes arrays will view from the inner to outer limiter on five different horizontal planes using a total of 132 channels. In order to study radiation in the divertor/x-point region, data from toroidally and poloidally viewing arrays will be tomographically inverted. To compensate for the AXUV's $> 50\%$ drop in sensitivity for ~ 10 eV photons, 50 Lyman- α filtered diodes and 40 unfiltered diodes will view the divertor and be independently inverted. Signal to noise modeling for typical plasmas is presented and its implications for the inversion are discussed. Estimations of expected flux surface asymmetries in impurity density, and thus emissivity, are summarized using both existing theory and previous Alcator C-Mod experimental results.

¹Supported by USDoE award **DE-FC02-99ER54512.

Matthew Reinke
MIT Plasma Science and Fusion Center

Date submitted: 21 Jul 2006

Electronic form version 1.4