

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

New correlation electron cyclotron emission temperature fluctuation diagnostic for Alcator C-mod C. SUNG, A.E. WHITE, J. IRBY, MIT, W.A. PEEBLES, X. NGUYEN, UCLA — A new Correlation Electron Cyclotron Emission (CECE) system for the measurement of electron temperature fluctuation is planned for Alcator C-mod. The multi-channel CECE radiometer will use the spectral decorrelation technique [1] to measure turbulent fluctuations that are below thermal noise levels. The design of the optics and Intermediate Frequency (IF) section was constrained using predictions from nonlinear gyrokinetic turbulence simulations using the GYRO code. A Gaussian optical system will provide high poloidal spatial resolution ($\omega_0 < 0.5$ cm) needed to measure long-wavelength core turbulence at C-Mod, $k_\theta \rho_s < 0.5$. The IF section will employ tunable band-pass filters to optimize turbulence measurements. We will present details of the new CECE system design and laboratory tests of the optics and IF section.

[1] G. Cima et al, *Phys. Plasmas*, **2**, 720 (1995)

Choongki Sung
MIT

Date submitted: 14 Jul 2011

Electronic form version 1.4