

Abstract Submitted  
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**Detection of Lower Hybrid Waves on Alcator C-Mod with Phase Contrast Imaging Using Electro-Optic Modulators**<sup>1</sup> K. ARAI, M. PORKOLAB, E. EDLUND, P. KOERT, R. PARKER, N. TSUJII, P. WOSKOV, S. WUKITCH, MIT PSFC, Cambridge, MA 02139, AND ALCATOR C-MOD TEAM — Detection of 4.6 GHz lower hybrid waves with Phase Contrast Imaging (PCI) presents a particular challenge due to the limited frequency response of the photoconductive detectors used for our 10.6  $\mu\text{m}$  CO<sub>2</sub> laser. Acousto-optic modulators have been used to detect ICRF waves in the 80 MHz range through optical heterodyning in Alcator C-Mod [1]. However, the scattering efficiency of the acousto-optic modulators limits modulation frequencies up to 100 MHz. Here we present the design of a waveguide loaded with cadmium telluride (CdTe) to serve as an electro-optic modulator for CO<sub>2</sub> laser amplitude modulation near 4.6 GHz. This amplitude modulator will be installed in the near future on our PCI system to detect lower hybrid waves. The expected signal quality will be discussed.

[1] M. Porkolab, et al, IEEE Trans. of Plasma Sci. 34, 229 (2006).

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