

Abstract Submitted  
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**Characteristics of X-Ray Emission from the PFRC-2 Capacitively Coupled Plasma**<sup>1</sup> RICHARD OLIVER, Brown University, JACOB PEARCY, Princeton University, PETER JANDOVITZ, CHARLES SWANSON, JACKSON MATTEUCCI, SAMUEL COHEN, Princeton Plasma Physics Laboratory, PFRC TEAM — It is uncertain what causes keV X-rays emitted from the central-cell region of a cool (bulk  $T_e \approx 4$  eV), tenuous ( $n_e \approx 10^{10}$  cm<sup>-3</sup>), 5 cm diameter, weakly ionized hydrogen plasma column generated in a tandem high-mirror-ratio mirror machine (PFRC-2 device) by a low-power, external, capacitively-coupled RF (27 MHz) antenna. We explored whether the energetic electrons responsible for the X-rays exist only in the central cell (ER) or also in the asymmetric mirror regions at opposite ends of the machine, as well as how the spectra compare if they do exist in both regions. To address this, we have designed, built, calibrated, installed and operated an X-ray detector system to view the PFRC-2 region near the RF antenna in one end cell (MC). We observe somewhat different X-ray spectra emanating from the two regions. The system comprises two Amptek XR-100CR detectors with moveable slits that scan across the plasma column. Further control of radial resolution (to 0.4 cm) is afforded by changing the detector-to-slit distance. Calibrations were performed with an <sup>55</sup>Fe source. These data are being used to understand the source of the fast electrons that create the X-rays in the MC and in the ER.

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