$[BoldFont = LinLibertine_RB.otf, ItalicFont = LinLibertine_RI.otf, BoldItalicFont = LinLibertine_RBI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [BoldFont = LinBiolinum_RB.otf, ItalicFont = LinBiolinum_RI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [BoldFont = LinBiolinum_RB.otf, ItalicFont = LinBiolinum_RI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [BoldFont = LinBiolinum_RB.otf, ItalicFont = LinBiolinum_RI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [BoldFont = LinBiolinum_RB.otf, ItalicFont = LinBiolinum_RI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [BoldFont = LinBiolinum_RB.otf, ItalicFont = LinBiolinum_RI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [BoldFont = LinBiolinum_RI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/] [Bol$

HTPD 2018



Contribution ID : 161

Type : not specified

2.16 Developing a Fast Visible Camera Diagnostic for 2D-Measurements of the Balmer Series and Impurity Emission Lines in Proto-MPEX Plasma Discharges

Monday, 16 April 2018 10:46 (120)

The Prototype Material Plasma Exposure eXperiment (Proto-MPEX) is a linear plasma device designed to generate divertor-like conditions, yielding electron densities up to ~1020 m-3 and electron temperatures up to ~20 eV. Monochromatic and color Edgertronic Sanstreak SC1 fast visible cameras capture high speed video (<18k fps) of plasma discharges. A 50/50 beam splitter allows both cameras to image the same region of the discharge. Concurrent multi-camera 2D line-integrated images were made of two or more emission line fields using narrow-band transmission filters. The deuterium Balmer series dominates the visible emission spectra from Proto-MPEX, confirmed via broadband spectrally resolved measurements. Under certain conditions, such as gas puffing, impurity line emissions were observed. Spatial features from multiple spectral line images were compared. Also, a uniform intensity white light source was used to calibrate pixel-to-pixel and absolute intensities. From this, the D α , D β , and D γ intensity ratio 2D fields and the 2D n0 and ne fields were estimated. Comparisons were drawn between line-integrated and Abel inverted emission (r,z) profiles. Discussion includes the limitations of the multi-camera technique and measured plasma material interactions (PMI) at the target plate.

Primary author(s): LINDQUIST, Elizabeth (Oak Ridge National Laboratory, Hope College)

Co-author(s): BIEWER, Theodore (Oak Ridge National Laboratory); RAY, Holly (University of Tennessee); BEERS, Clyde (University of Tennessee)

Presenter(s) : LINDQUIST , Elizabeth (Oak Ridge National Laboratory, Hope College); BIEWER, Theodore (Oak Ridge National Laboratory); RAY, Holly (University of Tennessee); BEERS, Clyde (University of Tennessee)

Session Classification : Session #2, Monday Morning Poster Session