Abstract Submitted
for the GEC16 Meeting of
The American Physical Society

Tomographic reconstruction for plasma diagnostic CHRISTOPHER WAGNER, MARCUS IBERLER, JOACHIM JACOBY, OLIVER MEUSEL, HOLGER PODLECH, ULRICH RATZINGER, IAP, Goethe-Univerity, HERMINE REICHAU, None — A tomographic system originally designed for high intensity ion beam diagnostic to reconstructed 3D light density of photons produced by interactions between ion beam and residual gas has been developed and commissioned. In contrast to the classical approach where the beam is rotated in front of the camera, the camera was rotated around the beam and images were taken at multiple angles. The reconstructed light density of each voxel is proportional to the beam particle density at this point. With a inverse radon transformation these images can be transformed to 2D slices through the observed volume. Additionally, a maximum entropy algorithm was implemented due to the potentially very limited number of angles. This concept can be transferred to the diagnostics of classical optical thin plasma. If combined with a shutter camera a suitable monochromator or spectral filters, it should be possible to reconstruct a time and spectral dependent 3D volume of the plasma.

Christopher Wagner
IAP, Goethe-Univerity

Date submitted: 10 Jun 2016 Electronic form version 1.4