Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Effects of electrode biasing in STOR-M Tokamak DEBJYOTI BASU, MASARU NAKAJIMA, AKBAR ROHOLLAHI, DAVID MCCOLL, JOSEPH ADEGUN, CHIJIN XIAO, AKIRA HIROSE, University of Saskatchewan — STOR-M is an iron-core, limiter based tokamak with major and minor radii of 46cm and 12 cm, respectively. Recently, electrode biasing experiments have been carried to study the improved confinement. For this purpose we have developed a DC power supply which can be gated by a high power SCR. The rectangular SS electrode has a height of 10 cm, a width of 2 cm and a thickness of 0.2 cm. The radial position of the electrode throughout the experiments is kept around 4mm inside the limiter in the plasma edge region. After application of positive bias with voltages between +90 V to +110 V during the plasma discharge current flat top with slightly higher edge-q_a (nearly 5 to 6), noticeable increment of average plasma density and soft x-ray intensity along the central chord have been observed. No distinguishable change in Hα emission has been measured. These phenomena may be attributed to improved confinement formed at the inner region but not at the edge. In the upcoming experimental campaign, Ion Doppler spectroscopy will be used to measure possible velocity shear inside the inner plasma region. Edge plasma pressure gradient will also be measured using Langmuir probes. Detailed experimental results will be presented.

Debjyoti Basu
University of Saskatchewan

Date submitted: 23 Jul 2015 Electronic form version 1.4