Abstract Submitted
for the GEC17 Meeting of
The American Physical Society

Construction of a multidipole cylindrical chamber, MAXIMUS, with magnetic X-point configuration and investigation of its plasma properties YEGEON LIM, DAEHO KWON, WON JUN LEE, Department of Nuclear and Quantum Engineering, KAIST, Daejeon 34141, South Korea, BO SUNG KIM, I.T.S, Daejeon 34024, South Korea, YOUNG-CHUL GHIM, Department of Nuclear and Quantum Engineering, KAIST, Daejeon 34141, South Korea — We have constructed a low temperature DC plasma source with a cylindrical (60cm radial and 200cm axial) multidipole chamber, 'MAgnetic X-point sIMUlator System (MAXIMUS)', whose base pressure is ~10^{-6} Torr. DC plasmas are generated by a number of hot tungsten filaments which can be biased up to -200 V with respect to the grounded chamber. By applying approximately 50A of current to the filaments, we obtain plasma density of the order of 10^9 cm^{-3} with the electron temperature of ~1 eV measured by a single Langmuir probe. A set of axial copper tube through the chamber creates an axially homogeneous magnetic X-point. This configuration allows us to investigate effects of X-point to the surrounding plasmas. In this work, we present basic properties of plasmas in MAXIMUS and how we can control them.

Yegeon Lim
KAIST

Date submitted: 01 Jun 2017 Electronic form version 1.4