

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

ECRH at 0.5 and 1 Tesla in the Helically Symmetric Experiment¹

KONSTANTIN LIKIN, DAVID ANDERSON, SIMON ANDERSON, CHUAN-BAO DENG, HUIJUAN LU, JERAHMIIE RADDER, JOSEPH TALMADGE, KAN ZHAI, HSX Plasma Laboratory, University of Wisconsin - Madison — A 28 GHz gyrotron power (up to 100 kW) is used to heat HSX plasmas. The experiments are done at 0.5 T with the extraordinary wave and 1 T with the ordinary wave. The plasma stored energy, confinement time and electron temperature are studied as a function of the absorbed power and the plasma density in two magnetic configurations - quasihelical symmetric (QHS) one and second with broken symmetry. Energy confinement time is up to 5 msec in QHS configuration at the higher field. Comparisons with the international stellarator transport scaling database will be presented. In the configuration with symmetry, the central electron temperature is higher (up to 2.5 keV) than in configurations without symmetry. The electron cyclotron emission (ECE) diagnostic shows the presence of suprathermal electrons at 0.5 T. At 1 T the plasma is almost thermal. We run the CQL3D code for 0.5 and 1 T plasma parameters. ECE spectrum versus plasma density at different power level is discussed.

¹The work is supported under DoE Grant DE-FG02-93ER54222

Konstantin Likin
HSX Plasma Laboratory, University of Wisconsin - Madison

Date submitted: 20 Jul 2007

Electronic form version 1.4