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**Higher power ECRH in the Helically Symmetric Experiment**[1]
KONSTANTIN LIKIN, DAVID ANDERSON, SIMON ANDERSON, JOHN CANIK, HUI JUAN LU, JERAHMIE RADDER, JOSEPH TALMADGE, KAN ZHAI, UW-Madison, WI, USA, CHUANBAO DENG, UC-Los Angeles, CA, USA, ROBERT HARVEY, CompX, Del Mar, CA, USA — A new transmission line has increased the maximum available ECRH power to HSX from 50 to 200 kW. Using a 28 GHz gyrotron at a magnetic field of 0.5 T, the extraordinary wave is launched at the second harmonic of the electron cyclotron frequency. In this new regime, the plasma stored energy, confinement time and electron temperature are studied as a function of the absorbed power and the plasma density. Comparisons with the international stellarator transport scaling database will be presented. In the configuration with quasihelical symmetry, the central electron temperature is higher ($\geq$1 keV) than in configurations without symmetry. The ECE diagnostic indicates the presence of a non-Maxwellian component in the emission spectrum. Results from the CQL3D Fokker-Planck code used to model the ECRH absorption and Electron Cyclotron Emission spectrum will also be presented.

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