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Magnitude and Possible Causes of the “ECE Overlap Problem” in NCS DIII–D Plasmas¹ G.D. GARSTKA, R.F. ELLIS, University of Maryland, M.E. AUSTIN, University of Texas, L.L. LAO, Y.R. LIN-LIU, General Atomics, B.W. RICE, Lawrence Livermore National Laboratory — The equilibrium flux mapping of electron temperature profiles obtained on DIII-D from second and third harmonic electron cyclotron emission frequently disagrees with that from Thomson scattering T_e profiles in high-performance negative central shear (NCS) and weakly-positive central shear discharges. Particularly, the ECE diagnostics seem to report higher electron temperatures than the Thomson scattering measurements on the low-field side, although the profiles coincide within error bars on the high-field side. This difference can be characterized for a particular equilibrium by calculating the reduction in mod-B required to force agreement with the ECE and Thomson profiles. Calculations including relativistic broadening into account show that the required reduction is less than 5% in almost all cases, and is typically closer to 2%. The effects of magnetic shear, plasma rotation, ion temperature, and fast ion population, on this problem are discussed.

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Prefer Oral Session
 Prefer Poster Session

G.D. Garstka
garstka@gav.gat.com
University of Maryland

Special instructions: DIII–D Poster Session II (divertor physics, disruptions, RF, & diagnostics), immediately following Bray

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