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Using ECE to Improve EFIT Results for NCS Discharges in DIII-D¹ M.E. AUSTIN, G. CIMA, University of Texas, R.F. ELLIS, University of Maryland, T.C. LUCE, General Atomics — Good equilibrium reconstructions are essential in plasma discharges that have negative central magnetic shear (NCS) in order to accurately determine the q -profile. In DIII-D, electron temperature profile data from second harmonic ECE are used to improve the equilibria obtained by the EFIT code by requiring overlap of high-field-side and low-field-side data in flux coordinates. It is shown that this provides an important constraint for properly locating the magnetic axis. The significance of antenna pattern and line broadening effects when determining the emission location for the ECE data is discussed. For cases where high electron density results in cut-off of the second harmonic ECE, use of the optically gray third harmonic is possible. A scheme is presented to automatically include ECE data constraints into the EFIT code.

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