Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Analysis Tools for the Ion Cyclotron Emission Diagnostic on DIII-D[1] C. A. DEL CASTILLO, SUNY Stony Brook, K. E. THOME, ORAU, R. I. PINSKER, O. MENEGHINI, D. C. PACE, General Atomics — Ion cyclotron emission (ICE) waves are excited by suprathermal particles such as neutral beam particles and fusion products. An ICE diagnostic is in consideration for use at ITER, where it could provide important passive measurement of fast ions location and losses, which are otherwise difficult to determine. Simple ICE data analysis codes had previously been developed, but more sophisticated codes are required to facilitate data analysis. Several terabytes of ICE data were collected on DIII-D during the 2015-2017 campaign. The ICE diagnostic consists of antenna straps and dedicated magnetic probes that are both digitized at 200 MHz. A suite of Python spectral analysis tools within the OMFIT framework is under development to perform the memory-intensive analysis of this data. A fast and optimized analysis allows ready access to data visualizations as spectrograms and as plots of both frequency and time cuts of the data. A database of processed ICE data is being constructed to understand the relationship between the frequency and intensity of ICE and a variety of experimental parameters including neutral beam power and geometry, local and global plasma parameters, magnetic fields, and many others.

C. A. del Castillo
SUNY Stony Brook

Date submitted: 18 Jul 2017   Electronic form version 1.4