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Implementation of a Microwave Imaging Reflectometer on DIII-D[1] D.M. KRIETE, Virginia Tech., B.J. TOBIAS, Princeton Plasma Physics Laboratory — The microwave imaging reflectometer (MIR) is a new plasma diagnostic system on DIII-D that will make localized measurements of density fluctuations on a poloidal cross section of the tokamak. The data from these measurements will provide a quantitative picture of plasma turbulence and MHD instabilities. This project's focus is to install the MIR system on DIII-D, perform calibration tests on it, and develop data analysis tools to process MIR data, with a focus on estimating measurement error. Tests include taking dark shots to subtract out passive noise from the measurements and taking plasma shots to better quantify active noise. Synthetic diagnostics based on numerical codes will also be used to evaluate the MIR system. The MIR uses the same optics as the existing electron cyclotron emission imaging (ECEI) system so, after completion, physicists will have access to a 2D image of both density and temperature fluctuations within the plasma. The MIR thus has broad utility across experiments seeking to understand turbulent transport.

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