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Theory Experiment

Applications of Collisional Radiative Modeling of Helium and Deuterium for Image Tomography Diagnostic of T_e , N_e , and N_D in the DIII-D Tokamak,* J.M. Munoz Burgos, *ORISE*; N.H. Brooks, *GA*; M.E. Fenstermacher, *LLNL*; W.H. Meyer, *LLNL*; E.A. Unterberg, *ORNL*; O. Schmitz, *FZ*; S.D. Loch, C.P. Balance, *Auburn U.* – We apply new atomic modeling techniques to helium and deuterium for diagnostics in the divertor and scrape-off layer regions. Analysis of tomographically inverted images is useful for validating detachment prediction models and power balances in the divertor. We apply tomographic image inversion from fast tangential cameras of helium and D_α emission at the divertor in order to obtain 2D profiles of T_e , N_e , and N_D (neutral ion density profiles). The accuracy of the atomic models for He I will be cross-checked against Thomson Scattering measurements of T_e and N_e . This work summarizes several current developments and applications of atomic modeling into diagnostic at the DIII-D tokamak.

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