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Theory Experiment

Application of OEDGE to Transport Coefficient Extraction in DIII-D Joule Milestone Discharges,* J.D. Elder, P.C. Stangeby, *U. Toronto*; C.J. Lasnier, M.A. Makowski, *LLNL*; J.A. Boedo, *UCSD*; N.H. Brooks, A.W. Leonard, *GA*; J.G. Watkins, *SNL* – The OEDGE modeling code is used to extract estimates of radial transport coefficients from a series of DIII-D experiments designed to assess the divertor heat flux dependence on operational parameters. OEDGE is being used to analyse five ELMy H-mode discharges in which the plasma current was varied from 0.5 MA to 1.48 MA while other parameters were held constant. Estimates of the effective experimental χ_{\perp} and D_{\perp} in the outer SOL for these discharges are determined. This process requires using experimental diagnostic data and onion-skin models (OSM) to reconstruct a plasma solution. Langmuir probe measurements of n_e and T_e and infra red measurements of target heat flux were used to determine input profiles of n_e , T_e and T_i to be used in the plasma reconstruction. At the 5 mm outer midplane surface, typical extracted D_{\perp} values are $0.05 \text{ m}^2/\text{s}$ while χ_{\perp} is $0.15 \text{ m}^2/\text{s}$. All discharges showed an increase of extracted χ_{\perp} with radius.

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