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Category Number and Subject:

Theory Experiment

Ion Orbit Loss and X-Loss Effects on the Interpretation of Transport in the Edge Pedestal,* W.M. Stacey, *Georgia Tech* – Models have been developed for the calculation of i) standard ion orbit loss across the separatrix and of ii) X-loss of ions in the narrow, null- B_θ region extending into the plasma from the X-point in a divertor plasma, which are trapped poloidally while they ∇B drift radially outward through the X-point region (X-loss). Calculations of a DIII-D discharge indicate a significant non-diffusive transport of ion particles and ion energy in the edge pedestal due to these loss mechanisms. Taking this particle and energy loss into account when determining the conductive ion energy flux results in a significant reduction in the experimental thermal diffusivity interpreted from the measured temperature profile.

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