

Abstract Submitted
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Ion Orbit Loss Effect on Structure of Radial Electric Field¹ T.M. WILKS, W.M. STACEY, Georgia Tech, T.E. EVANS, General Atomics — The radial electric field is an important factor in the L-H transition, the onset of edge localized modes (ELMs), etc. Therefore the causes and trends of the radial electric field in the edge and scrape off layer regions are of interest. As part of an investigation of mechanisms for controlling the electric field in the edge plasma, the effects of ion orbit loss and the compensating ion return current on the radial electric field in the edge region and scrape off layer are analyzed. Both thermalized plasma ions and fast ion losses are considered in the investigation, and shown to have implications on the toroidal and poloidal rotation velocity profiles, which are closely linked to the radial electric field. Local density and temperature profiles are taken into account in order to model the fraction of ions that pass the separatrix, but orbit back into the edge plasma. The inclusion of fast beam ions along with the orbit loss of thermal ions and the compensating return ion current is found to have a significant effect on the structure of the radial electric field in the edge pedestal.

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Theresa Wilks
Georgia Tech

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