

Abstract Submitted  
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**Analysis of time-dependent particle transport in the tokamak boundary plasma**<sup>1</sup> T.D. ROGNLIEN, LLNL, R.J. GROEBNER, GA, S.K. NAM, LLNL — Plasma particle transport in the edge and scrape-off layer of tokamaks is not well understood but is important for core fueling, helium removal, and impurity intrusion. A simple 1D model is presented to clarify the time-dependent impact of different possible mechanisms including penetration and ionization of recycled or injected neutrals, and plasma diffusion and convection. More detail of edge profile dynamics between Edge-Localized-Modes (ELMs) corresponding to re-building of the pedestal region is studied with the 2D UEDGE transport code. The influence of the ion pinch associated with perpendicular ion viscosity is evaluated. It is assumed that during quasi-steady-state discharges with regularly-spaced bursts of Edge Localized Modes (ELMs), the net pumping of all walls and pumps averaged over an ELM cycle is just sufficient to remove the small neutral beam particle source. The simulation results are then compared with similar time-dependent data for DIII-D edge density profiles between ELMs.

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