

Abstract Submitted
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Impurity migration pattern under RF sheath potential in tokamak and the response of Plasma to RMP¹ XIAOTAO XIAO, BIN GUI, TIANYANG XIA, ASIPP, XUEQIAO XU, LLNL, YOUWEN SUN, ASIPP — The migration pattern of impurity sputtered from RF guarder limiter, is simulated by a test particle module. The electric potential with RF sheath boundary condition on the guard limiter and the thermal sheath boundary condition on the divertor surface are used. The turbulence transport is implemented by random walk model. It is found the RF sheath potential enhances the impurity percentage lost at low filed side middle plane, and decreases impurity percentage drifting into core region. This beneficial effect is stronger when sheath potential is large. When turbulence transport is strong enough, their migration pattern will be dominated by transport, not by sheath potential. The Resonant Magnetic field Perturbation (RMP) is successfully applied in EAST experiment and the suppression and mitigation effect on ELM is obtained. A two field fluid model is used to simulate the plasma response to RMP in EAST geometry. The current sheet on the resonance surface is obtained initially and the resonant component of radial magnetic field is suppressed there. With plasma rotation, the Alfvén resonance occurs and the current is separated into two current sheets. The simulation result will be integrated with the ELM simulations to study the effects of RMP on ELM.

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