

Impurity transport and turbulent transport under detachment with closed divertor on HL-2A

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Abstract

Controlling heat loads on divertor target is one of the key issues for ITER and CFETR. At present one of the most feasible solutions of H-mode long-pulse discharge for ITER is detachment scenario. Detachment physics is extremely complex and requires great efforts of further investigation. Recent detachment results from DIII-D show that plasma with relative closed divertor behaves better than open divertor. HL-2A divertor is completely closed which makes its divertor physics unique from other devices. HL-2A experiments shows that impurities barely travels from divertor to the main chamber under partial detachment in L mode plasma while impurities accumulate in the main chamber in H mode plasma. Studying the physics of impurity transport through such narrow divertor throat under different states of detachment on HL-2A is crucial. Radial profiles may redistribute under detachment. Turbulent transport affected by impurity transport as well as the redistribution of mean profiles will be presented in this study. Keyword: detachment, impurity transport, turbulent transport.