

Abstract Submitted
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Effects of impurity seeding on H-mode pedestal near divertor detachment¹ H.Q. WANG, ORNL, H.Y. GUO, A.W. LEONARD, T.H. OSBORNE, P.B. SNYDER, D.M. THOMAS, GA, J.G. WATKINS, SNL — Injection of N_2 , Ne and Ar has been performed in DIII-D to assess the impact of impurities on type-I ELMy H mode plasmas near divertor detachment. Prior to detachment, both pedestal pressure and temperature in the impurity-seeded plasmas are comparable with that in non-seeded plasma. The transition to detachment leads to a pedestal temperature drop, which propagates from the edge to the core plasma, eventually degrading the global confinement. The pedestal pressure exhibits a strong correlation with the impurity content and the power across the pedestal. With N_2 seeding, radiation is predominantly localized in the divertor/SOL region and the pedestal temperature is only reduced by $\sim 30\%$ at detachment, comparable with that in non-seeded plasmas. In contrast, Ar injection leads to significant core radiation, resulting in $\sim 60\%$ reduction in pedestal temperature at the onset of detachment. In Ne-seeded plasmas, pedestal temperature is reduced by $\sim 50\%$

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