

## Turbulent impurity transport of electrostatic drift wave in tokamak plasmas

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### Abstract

Experiments in tokamaks show that, in addition to neoclassical transport, small-scale turbulence induced by drift instabilities plays a significant role in particle transport [1-3]. In recent experiments on HL-2A, Tore Supra *et al.*, it is found that the experimental threshold (especially the critical gradients) is in well agreement with the one calculated with gyrokinetic model [4]. Meanwhile, it is well known that the impurity problem is of great importance since even a small quantity of impurity strongly enhances the radiation loss and leads to the dilution of plasma reactivity [5-6].

In order to investigate the turbulent impurity transport of electrostatic drift wave, the quasilinear particle transport is considered in the toroidal gyrokinetic integral code HD7. Detailed analyses about the dependence of particle flux on plasma parameters, especially the gradient thresholds are performed. Comparing various electrostatic drift instabilities, it reveals that the impurity transport induced by impurity ions is of great significance in contrast with other electrostatic instabilities and is expected to have significant influence on plasma transport and confinement.

### References

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