# Simulation of divertor heat flux widths on EAST by BOUT++ transport code*

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The BOUT++ edge plasma transport code is applied to simulate the divertor heat flux widths for EAST steady state H-mode discharges. The code is a two-fluid transport code, solving a system of equations for plasma density, electron and ion temperatures, parallel ion flow velocity, parallel current, electrostatic potential and vorticity, with all drifts and the sheath potential in the SOL. Transport coefficients are calculated based on the experimental profiles inside the separatrix and then extending to the SOL region. The simple neutral transport model is used. The wall and divertor particle recycling boundary conditions are included. The plasma-neutral interactions taken into account are charge-exchange, ionization and recombination. The simulations of the divertor heat flux widths of EAST steady state H-mode discharges has been carried out by BOUT++ without drifts and neutrals. The heat flux widths from the simulations are in reasonable agreement with the experimental results, however, the widths from both the simulations and experiments turn out to be a factor of 2 larger than Goldston's drift-based model and Eich's multi-machine scaling, which may probably be due to the dominant RF heating on the EAST discharges involved in this work [G.Z. Deng et al., Plasma Phys. Control. Fusion 60 (2018) 045001, T.Y. Xia et al., Nucl. Fusion 57 (2017) 116016]. The simulations with drifts and neutrals will be presented for figuring out their impacts on EAST divertor heat flux widths.

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