

## Modelling of heat load and impurity for HL-2M advanced divertor

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HL-2M is a tokamak under construction at SWIP in China. Its total design heating power is 25MW and the maximum plasma current is 3.0MA with the maximum toroidal field of 3.0T, major radius of 1.78m and minor radius of 0.65m. The poloidal field coils are placed inside the demountable toroidal field coils and close to the main plasma. As a result, it is possible to make highly accurate configuration control of the advanced divertor for HL-2M. Standard, snowflake and tripod divertor configurations with different plasma current have been studied and analyzed by EFIT code with a free-boundary Grad-Shafranov solver. To be compatible with these divertor configurations under the engineering condition of HL-2M, the divertor target geometry has been designed.

To analyze the divertor operation under the plasma conditions of HL-2M by boundary transport codes (SOLPS, SOLPS-ITER), the constant cross field transport factors are adjusted to achieve the heat flux width of the standard divertor, and used in advanced divertor simulation with the same plasma current as the standard divertor. The heat load on the targets with the effects of different divertor leg length, second X-point position and the connection length under the advanced divertor configurations are investigated. The effect of gas puffing and pumping rate on N impurity seeding under the open divertor geometry for advanced divertor configurations operation are also studied, such as the low recycle, detachment and the control of particle flux.