# Snowflake divertor discharge simulation on HL-2M

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Since the 'snowflake' (SF) configuration with the high poloidal flux expansion, a large plasma wetted area, which is beneficial to reduce peak heat flux. The SF divertor has been proposed as a geometrical solution to reduce heat loads onto the material surfaces in diverted tokamak plasmas for ITER or a demonstration reactor (DEMO).In experiment, the snowflake divertor has been implemented in TCV, NSTX and DIII-D. These experiment results demonstrate the decrease of heat loads on the target plate.

HL-2M will be built in SWIP, which can operation standard divertor and snowflake divertor as the reasonable arrangement and the independent power supply for the poloidal field coils, so HL-2M has the advantage of operation and control the snowflake divertor.

In this paper, the first part briefly introduces the main parameters of HL-2M and the basic equilibrium Snowflake configuration which designed by EFIT. In the second part, the special null field configuration is designed for the Exact SF discharge waveform. In result, the exact SF configuration can be maintain during all the flattop of plasma current (Ip). In the third part, the TSC simulation results of SF configuration discharge has been introduced. Though the exact SF configurations are designed for all time of the flattop of Ip, it can't obtain exact SF configuration at most time of the flattop,as shown as Figure1. In the third part, a new control algorithm for the snowflake divertor configuration will be introduced. With this algorithm, the position of the X-points, can be accurately tuned by regulating the current in PF coils, meanwhile remain the plasma main parameters. The last part will give a summary.

References

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Figure 1

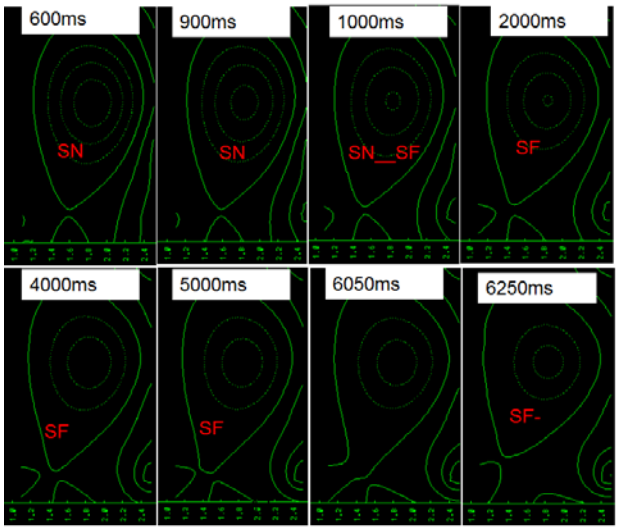


Figure 1, The Last Close Flux Surface evolution of SF