

P5.1077 Preliminary research on the reversal transport barrier in HL-2A H-mode discharges

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See full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/P5.1077.pdf>

In the common transport model, the anomalous transport is believed to be attributed to the plasma turbulence. The ExB shearing flow suppress the turbulence to reduce the radial transport. The formation of the transport barrier makes a very strong ExB shear to achieve the high confinement state (H-mode). The radial correlation length of the turbulence is interrupted, which is the important mechanism to lower the radial transport. In addition, the existence of zonal flows will play an important role to improve the confinement. From the generation of poloidal flow from the Reynolds stress theory, the turbulence accumulation in the radial direction will lead to the poloidal acceleration. The transport barrier could be treated as a solid wall to change the radial flux to the poloidal direction. In this phenomenological opinion, the transport barrier could also reflect radial flux to the inward direction. The inward flux caused by long live mode (LLM) due to the tremendous changes of the cross phase between poloidal electric field and electron density are observed in certain radial region on HL-2A discharges. The correlation between the edge and core LLM signals indicates the inward transport originates from the electrical field instead of plasma density, which indicates the electrostatic potential structure is the key to forming the inward transport. The preliminary research on the reversal transport barrier is detailly provided in this poster.

References

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