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Developing the Simulation of Spectra Code Based on HL-2A tokamak Motional Stark Effect and Beam Emission Spectroscopy

J.WU1, Y.C.CHEN1, P.CHEN1, L.M.YAO1, H.Y.ZHOU2, Y.Liu2, J.L.FU1

1. School of physical electronics, university of electronic science and technology of china

610054, Chengdu, China

2. Southwestern Institute of Physics, 610041

Abstract: Beam emission spectroscopy (BES) diagnostic system had been developed on HL-2A tokomak. Combined with motional stark effect (MSE) diagnostics, it could get radial electric field Er and safety factor q, which play an important role on the plasma-control and impurity transport process. The simulation of spectra (SOS) code developed by TU/e fusion group was used for spectra simulation based on various tokamak device real situation, which used its tokamak parameters. It could be used for designing spectral diagnosis system and perdition performance of its characters. In this paper, based on HL-2A experiment running condition parameters, simulated BES and MSE spectra by SOS were consistent with experimental data fitting results. It also got calculated magnetic field pitch angle and other parameters via experimental data, which also agree with the results of simulation code .The results reveal that the SOS code can be used to design similar diagnostic systems for its reliable prediction in the future ITER .

Keywords:NBI diagnostics,Beam emission spectroscopy, Motional stark effect,Simulation of spectra Acknowledgments: This work was supported by the members of HL-2A team. The author will be grateful to Von Hellermann for constructive discussion.

Eligible for student paper award?

Yes

Authors: Prof. WU, J; Mr CHEN, Y.C; Dr CHEN, P; Prof. YAO, L.M; Dr ZHOU, H.Y; Dr LIU, Y; Dr FU, J.L

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