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Gas Puff Imaging Measurements During Resonant Magnetic Perturbations on HL-2A Tokamak

JB Yuan¹, M Xu¹, Y Yu², BD Yuan², L Nie¹, WL Zhong¹, ZH Wang¹, T Wu¹, SB Gong¹, R Ke¹, T Long¹, HL-2A Team¹

¹ Center for Fusion Science, Southwestern Institute of Physics,

² School of Physical Science, University of Science and Technology of China

e-mail (speaker): yuanjb@swip.ac.cn

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A new Gas Puff Imaging (GPI) diagnostic has been developed and put into experimental research on HL-2A tokamak to study plasma turbulence in the edge and Scrape-Off Layer (SOL). Here we will present the principle and experimental setup of GPI and experimental results. The impact of Resonant Magnetic Perturbation (RMP) on turbulence poloidal velocity (V_θ) are investigated and common features are observed. The application of RMP increases V_θ in the SOL and brakes it in the edge when the RMP coils currents are under threshold. When $I_{RMP} > 4\text{kA}$, the inversion point of poloidal velocity begins to shift further inside, consistent with the measurements by Langmuir probes on TEXTOR. Besides, A strong impact of the RMP on the n_e fluctuations in the SOL is also observed, With RMP, both skewness and kurtosis are smaller in the SOL and large-scale turbulence structures (small k_r and k_θ) are suppressed in both edge and SOL.

References

- Y. Xu, R. R. Weynants, S. Jachmich, et al. *Phys. Rev. Lett.*, 97(16):5003, 2006.
 Y. Xu, M. Van Schoor, R.R. Weynants, et al. *Nucl. Fusion*, 47:1696, 2007.
 R.J. Groebner, K.H. Burrell, and R.P. Seraydarian. *Phys. Rev. Lett.*, 64:3015, 1990.
 P. Tamain, A. Kirk, E. Nardon, et al. *Plasma Phys. Control. Fusion*, 52(07):5017, 2010.
 A. Kramer-Flecken, S. Soldatov, C. Busch, et al. *Nucl. Fusion*, 46:S730, 2006.
 T.E. Evans, R.A. Moyer, K.H. Burrell, et al. *Nature Phys.*, 2:419, 2006.

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Note: Abstract should be in 1 page.