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Phase Contrast Imaging on the HL-2A Tokamak[1] YI YU, SHAOBO GONG, School of Nuclear Science and Technology, University of Science and Technology of China, MIN XU, Southwestern Institute of Physics, WEI JIANG, School of Nuclear Science and Technology, University of Science and Technology of China, WULV ZHONG, ZHONGBIN SHI, Southwestern Institute of Physics, HUAJIE WANG, YIFAN WU, BODA YUAN, School of Nuclear Science and Technology, University of Science and Technology of China, TAO LAN, Department of Modern Physics, University of Science and Technology of China, MINYOU YE, School of Nuclear Science and Technology, University of Science and Technology of China, XURU DUAN, Southwestern Institute of Physics, HL-2A TEAM — In this article we present the design of a phase contrast imaging (PCI) system on the HL-2A tokamak. This diagnostic is developed to infer line integrated plasma density fluctuations by measuring the phase shift of an expanded CO_2 laser beam passing through magnetically confined high temperature plasmas. This system is designed to diagnose plasma density fluctuations with the maximum wavenumber of 66 cm^{-1}. The designed wavenumber resolution is 2.09cm^{-1}, and the time resolution is higher than 0.2 μs. The broad $k\rho_s$ ranging from 0.34 to 13.37 makes it suitable for turbulence measurement. An upgraded PCI system is also discussed, which is designed for the HL-2M tokamak.

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