

Abstract Submitted
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Ultra high density measurement by one micrometer dispersion interferometer on KSTAR SPI experiments KWAN CHUL LEE, J. W. JUHN, NFRI, D. K. LEE, KAIST, KSTAR TEAM — In the frame of the ITER Disruption Mitigation Task Force program, a new Dispersion Interferometer (DI) system on KSTAR is developed and installed for the Shattered Pellet Injection (SPI) experiments. The DI is essential for assessing the efficiency of multiple SPI to raise the density to values sufficient for avoiding runaway electron formation in ITER. Since the SPI induced density rise is 20 times higher than the routine electron density in KSTAR, an interferometer with shorter wavelength is required. The dispersion interferometer can avoid the vibrational noise at short wavelength. A vertical 3-channel DI system using 1064 nm base laser is designed and installed. The detailed description of the system including the second harmonic generation, the modulation, the detection, and the vibration isolation will be presented along with the first result from the test channel, which shows a fast rise of the electron density up to $7 \times 10^{21} / \text{m}^3$ in 1 msec during SPI.

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