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## 8.10 Improvements of collective scattering measurements by polarimeter-interferometer on J-TEXT tokamak

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In our previous works, the multichannel three-wave polarimeter-interferometer system (POLARIS) on J-TEXT tokamak has been exploited to measure far-forward collective scattering (FCS) from electron density fluctuations [1]. Most recently, some substantial improvements have been completed. Firstly, the data processing is optimized, so that the low-frequency density fluctuations (<20kHz) could be obtained, which is covered by the intermediate frequency (IF) in previously. By use of the new data processing, low-frequency density fluctuations associated with tearing mode and zonal flow have been observed. Secondly, the effect of refraction of incident beam passing plasma on FCS measurements has been considered, so that the identification of propagation direction of density fluctuation is available for measuring channels at edge region, where the refraction angle is significant. And two different quasi-coherent density fluctuations propagating in ion and electron direction respectively have been observed in J-TEXT Ohmic plasma. [gezhuang@ustc.edu.cn](mailto:gezhuang@ustc.edu.cn)

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[3] Zhuang, G et al., Nuclear Fusion 51.9, 094020 (2011).

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