

Velocity-space tomography from synthetic FIDA measurements at EAST

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In the Experimental Advanced Superconducting Tokamak (EAST), a vertically viewing and a tangentially viewing fast-ion D-alpha (FIDA) diagnostics have been installed in order to investigate fast-ion dynamics [1, 2, 3]. This is done by measuring the Doppler-shifted D-alpha light arising due to charge exchange between a neutral beam and the fast ions. By combining measurements from both FIDA instruments, the fast-ion velocity distribution can be obtained by velocity-space tomography [4]. To explore the possibilities and limitations of velocity-space tomography in studying the fast-ion distribution in EAST, we present the reconstruction of the fast-ion velocity distribution from synthetic FIDA measurements using EAST MHD-quiescent conditions including both a counter- and a co-current neutral beam injectors with beam energies of 55 keV and 47 keV, respectively.

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