Abstract Submitted
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Inference of Fast-Ion Density Profile from Tomographic Reconstructions of Fast-Ion D_α Measurements[1] L. STAGNER, W.W. HEIDBRINK, C. COLLINS, University of California Irvine, B.A. GRIERSON, Princeton Plasma Physics Laboratory — The fast-ion D_α (FIDA) diagnostic measures light that energetic particles emit in fusion plasmas. The diagnostic is sensitive to different velocity space regions depending on the viewing angle relative to the magnetic field. Consequently, viewing chords that share a radial location give different, yet still valid, results. Velocity space tomography allows for these viewing chords to be combined to infer the complete fast-ion distribution function from the different partial views. If this is done at many radial locations the fast-ion density profile is measured. We demonstrate this method for the case of a classically described, low power, MHD-quiescent plasma from actual FIDA measurements. FIDA measurements were taken at four radial positions, each with four different viewing angles. Simulation results are also shown.

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