## Abstract Submitted for the DPP13 Meeting of The American Physical Society

Velocity-space tomography of the fast-ion distribution function ASGER SCHOU JACOBSEN, MIRKO SALEWSKI, Technical University of Denmark, BENEDIKT GEIGER, Max-Planck-Institut für Plasmaphysik, Garching, MANUEL GARCIA-MUNOZ, University of Seville, WILLIAM HEIDBRINK, University of California-Irvine, SØREN BANG KORSHOLM, FRANK LEIPOLD, JENS MADSEN, POUL MICHELSEN, Technical University of Denmark, DMITRY MOSEEV, Max-Planck-Institut für Plasmaphysik, Garching, STEFAN KRAGH NIELSEN, JESPER RASMUSSEN, MORTEN STEJNER, Technical University of Denmark, GIOVANNI TARDINI, Max-Planck-Institut für Plasmaphysik, Garching, ASDEX UPGRADE TEAM — Fast ions play an important role in heating the plasma in a magnetic confinement fusion device. Fast-ion  $D_{\alpha}(FIDA)$  spectroscopy diagnoses fast ions in small measurement volumes. Spectra measured by a FIDA diagnostic can be related to the 2D fast-ion velocity distribution function. A single FIDA view probes certain regions in velocity-space, determined by the geometry of the set-up. Exploiting this, the fast-ion distribution function can be inferred using a velocity-space tomography method. This poster contains a tomography calculated from measured spectra from three different FIDA views at ASDEX Upgrade. The quality of the tomography improves with the number of FIDA views simultaneously measuring the same volume. To investigate the potential benefits of including additional views (up to 18), tomographies are inferred from synthetic spectra calculated from a simulated distribution function. The number of experimentally available views can be increased by combining different types of diagnostics in a joint velocityspace tomography. Using this, up to 7 views are available at ASDEX Upgrade from 2014.

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