Abstract Submitted
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Characterization of fast ion confinement in the NSTX based on FIDA diagnostic measurements[1] A. BORTOLON, W.W. HEIDBRINK, University of California, Irvine, CA 92697, M. PODESTA, Princeton Plasma Physics Laboratory — Confinement of energetic ions is a critical issue for fusion devices. In last years, much interest has been devoted to losses or redistribution, in real and velocity space, caused by Alfvénic modes. More recently it emerged that, in absence of energetic particles modes, fast ions transport can differ from what expected from classical predictions. This work addresses experimentally the confinement of fast ions in NSTX. The radial fast ion density profile n_f, measured by the Fast Ion D_α (FIDA) diagnostic from the high energy tails of D_α emission, is characterized over an extended database of plasma discharges including L-mode, H-mode, and with different types of MHD and Alfvénic modes. Radial gradient of n_f, the drive of energetic particle instabilities, is observed to vary substantially in different plasma conditions. Dependence of n_f peaking on plasma parameters (e.g. I_p, n_e, B_t) will be reported and compared with predictions based on classical fast ion transport.

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