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Fast Ion Redistribution and CAE Destabilization in Presence of Low Frequency MHD, in NSTX H-mode Plasmas[1] ALESSANDRO BORTOLON, University of California, Irvine, ERIC FREDRICKSON, GERRIT KRAMER, MARIO PODESTA, Princeton Plasma Physics Laboratory, WILLIAM HEIDBRINK, University of California, Irvine — In NSTX H-mode plasmas, the confinement of injected energetic beam ions is often deteriorated by early low frequency kink modes ($10-20$ kHz, $n=1-3$). After the mode onset, FIDA measurements show a collapse of fast ion density profile, with central values reduced by as much as 30%. Early kinks are often accompanied by clusters of high frequency Compressional Alfvèn Eigenmodes ($1.5-2$ MHz, $n=9-12$). Observations suggest that fast ion redistribution from core to edge associated with the kink may enhance the CAE drive to destabilization. We investigate this hypothesis simulating the fast ion distribution function in a kink perturbed equilibrium, with the full orbit code SPIRAL. The mode structure is derived from combined measurements (Mirnov arrays, SXR, interferometry), and checked against ideal stability calculations. Results are compared to FIDA measurements, with the support of preliminary observations from the new tangential view, sensitive to co-going passing fast ions.

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