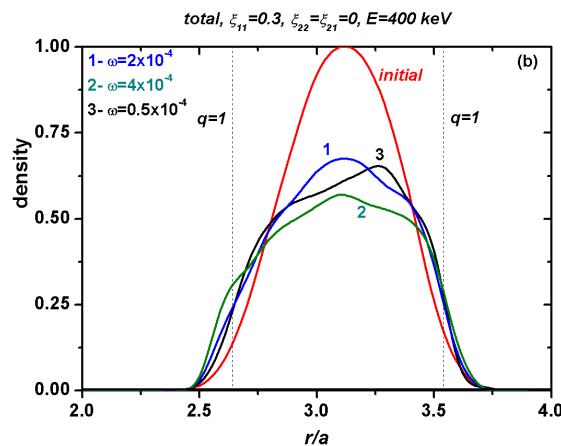


Redistribution of Energetic Particles due to Internal Kink Modes

- Redistribution determined by calculating the exact orbits of a large number of particles in the total fields (equilibrium plus perturbation).
- Analytic equilibrium with circular cross section (ITER like parameters). Perturbed fields obtained with ideal MHD and experimental information on mode structure and time dependence.
- The energy range of the particles that are most affected (larger redistribution) depends on the number, amplitude, and frequency of the modes present.
- For our conditions, the most important contribution comes from the electric field produced by the rotation of the mode.
- The addition of a (2,1) mode, which produce the stochastization of the field, significantly increases particle redistribution. Particles can spread beyond the $q=1$ surface and leave the plasma.
- With the (1,1) mode alone, counter-passing particles, which rotate in the sense of mode propagation, are the most affected. When a (2,1) mode is added, trapped particles are the most affected.



Initial and final density profiles for different mode frequencies, $E=400$ keV. Left, only (1,1) mode; right (1,1), (2,2) and (2,1) modes

