

Slow term emittance growth

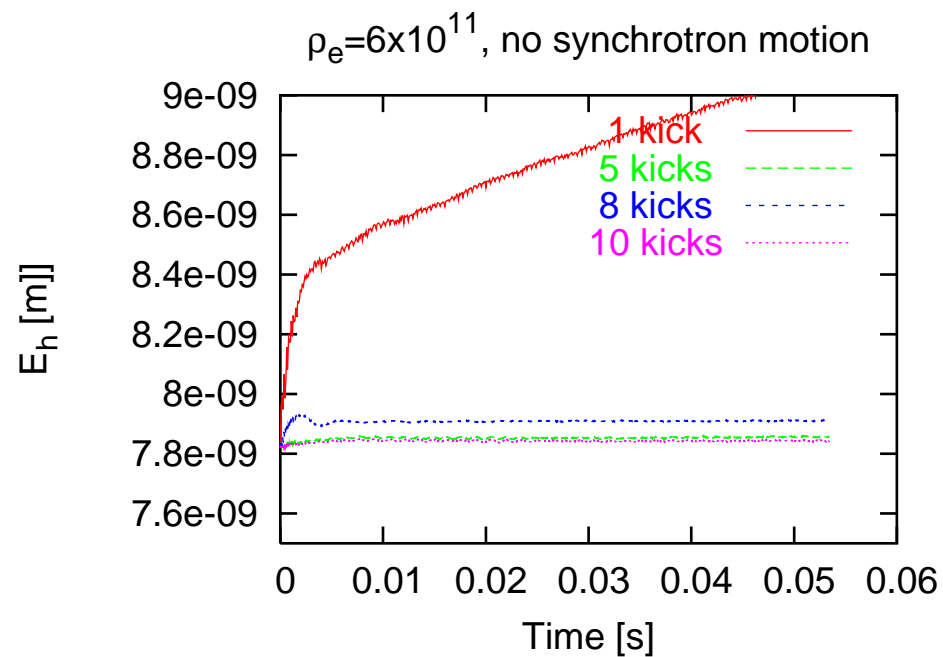
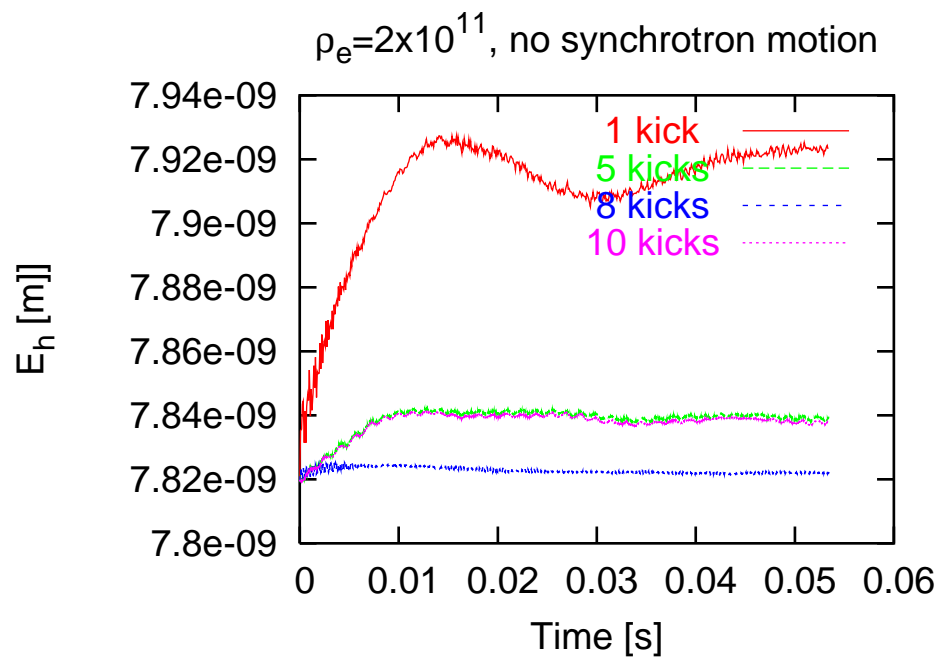
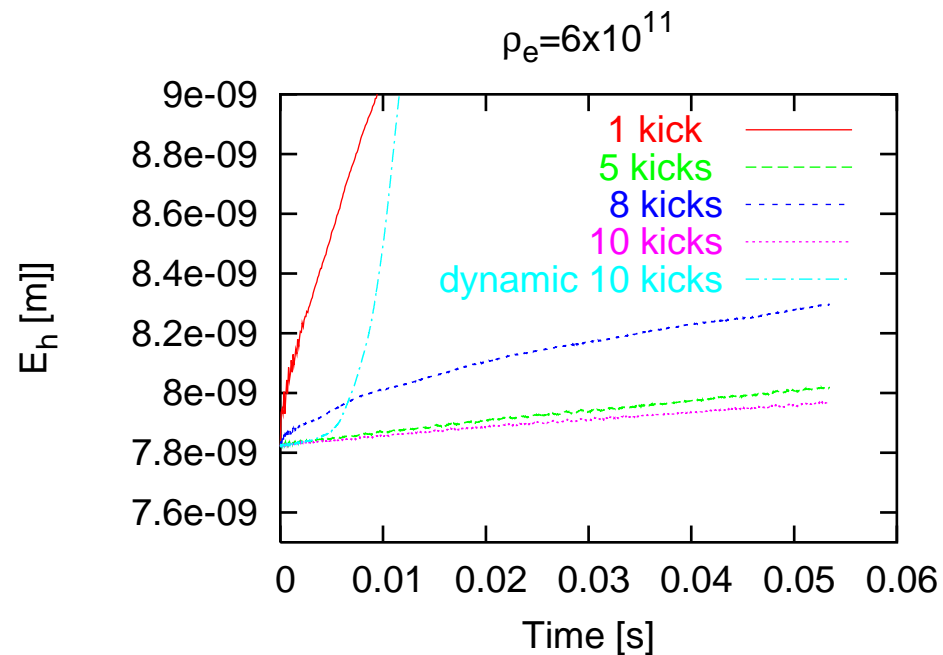
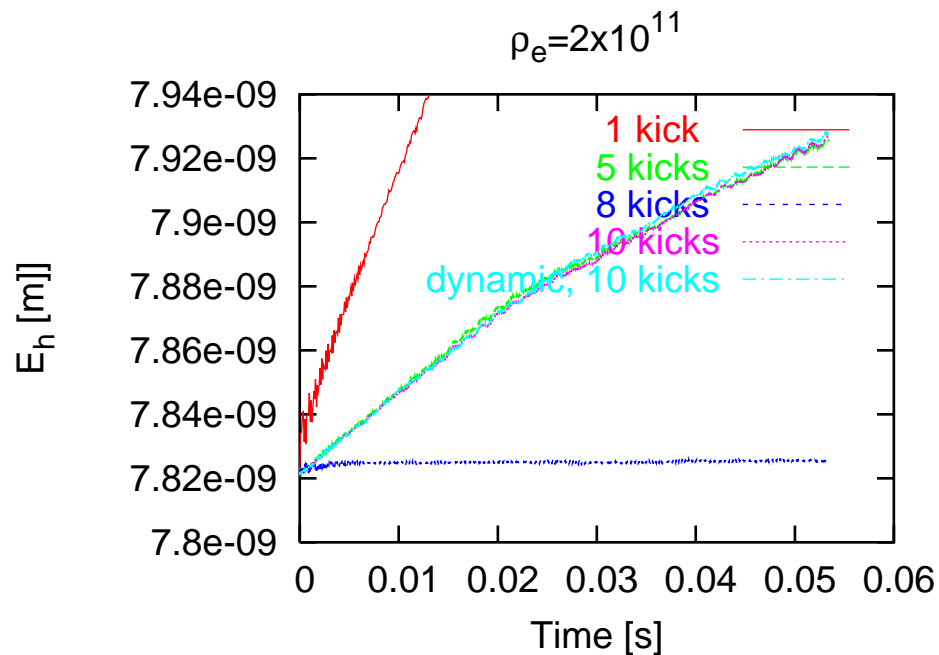
for a proton beam passing in a
'dynamic' e-cloud
compared with a static potential

Dynamic cloud

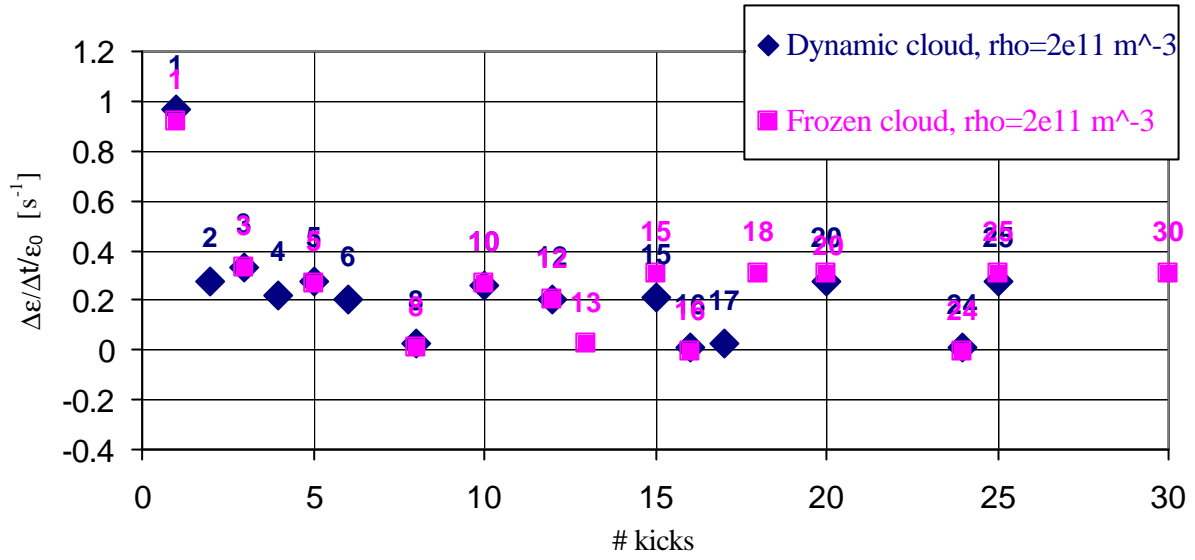
- In simulation of single-bunch instabilities due to e-cloud we assume:
 - E-cloud localized at some interaction points along the ring (n-kick approx)
 - The cloud dynamically evolves during the passage of the bunch
 - At every interaction point, the cloud is ‘refreshed’ and the electric field is computed in a PIC module, according to the actual position of the macroparticles

Static Potential

- We compute the potential, in which the proton bunch moves, **ONLY** at the first interaction with the cloud
 - The field depend on the longitudinal position of the particle, **BUT** is constant every turn
- Synchrotron motion can be switched **ON** or **OFF**



Horizontal emittance



Vertical emittance

