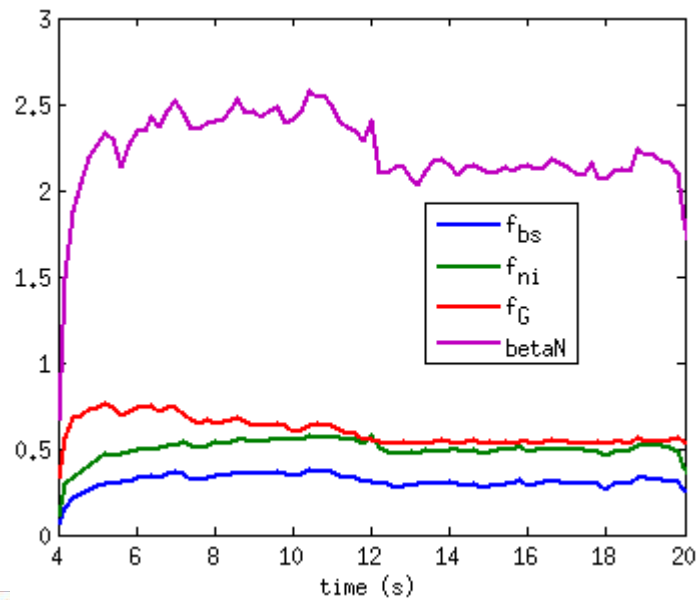
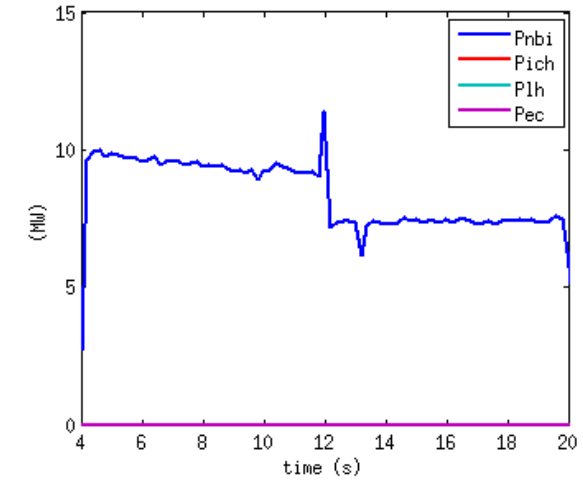
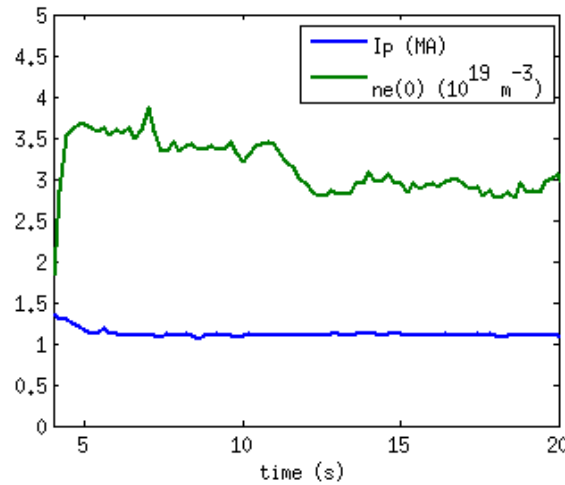
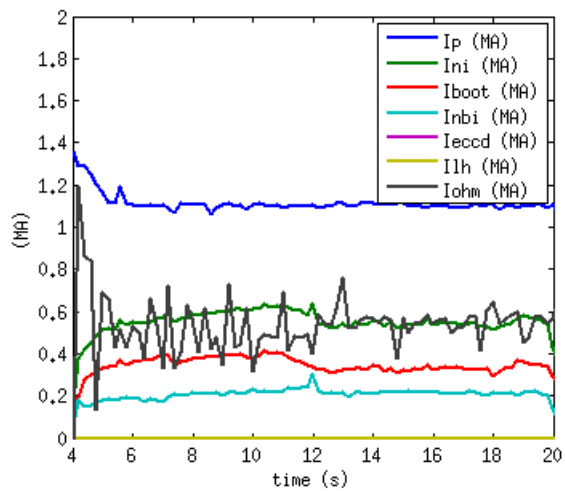


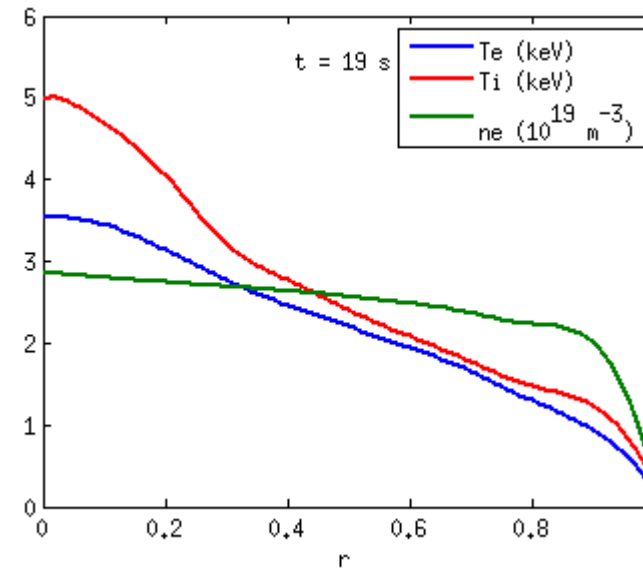
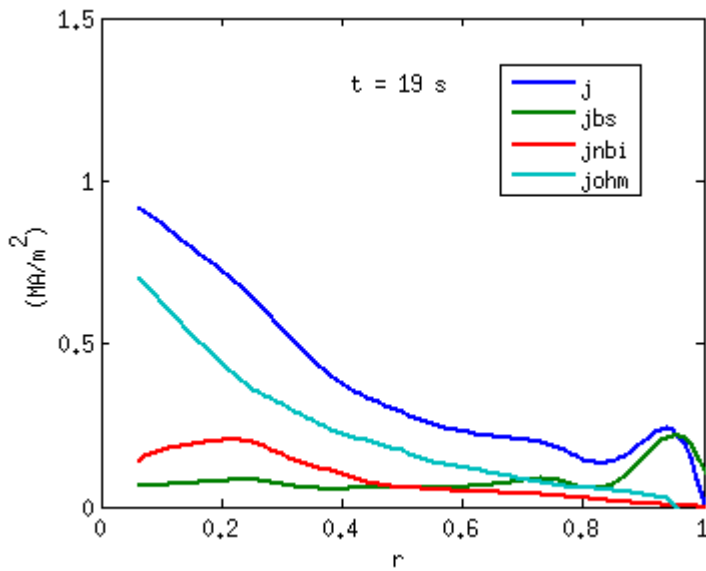
Analysis of the hybrid shot 77280

Shot 77280



- Long hybrid shot: 20s
- NBI: 10MW before 12s, 8 MW after 12s
- $I_p=1.1$ MA, $B_t=2.0$ T
- $H_{98} \approx 1.2$
- $\beta_N=2.5$ before 12s, $\beta_N=2.2$ after 12s
- $f_G=0.7$ before 12s, $f_G=0.55$ after 12s
- $f_{bs}=37\%$ before 12s, $f_{bs}=32\%$ after 12s

Shot 77280

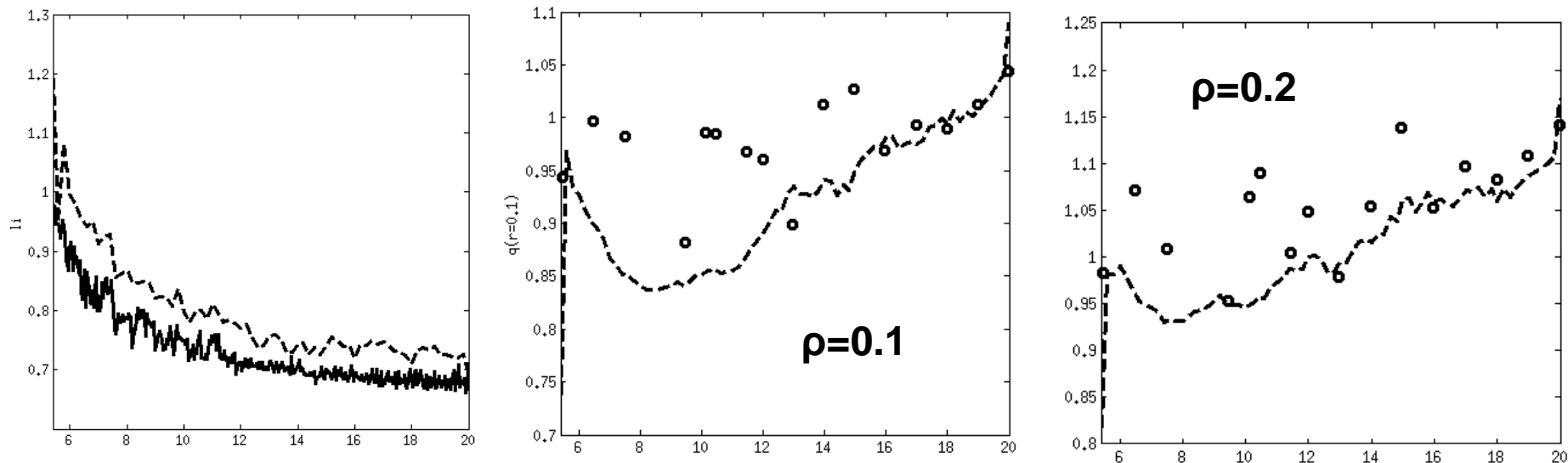


- Off-axis NBI and bootstrap current
- Weak ITB for the ions
- Low temperature due to the low NBI power

Shot 77280

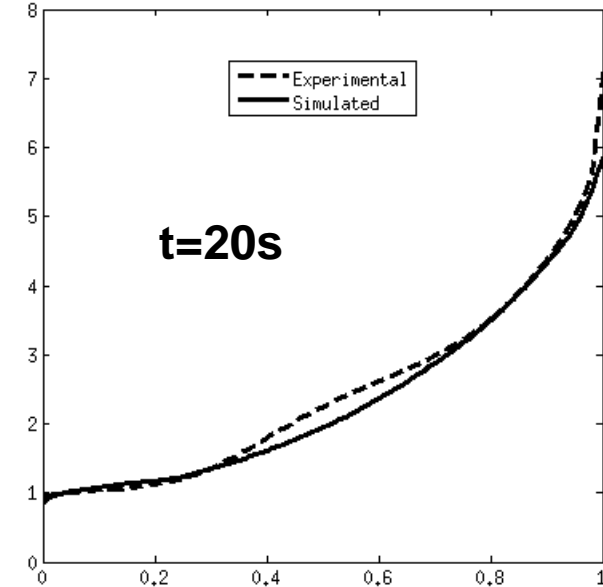
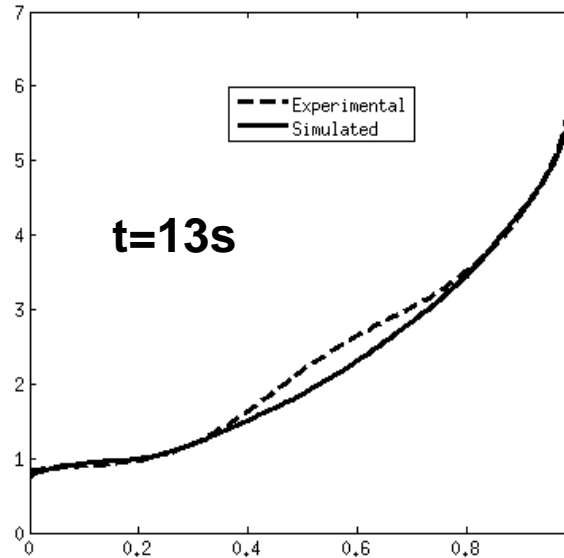
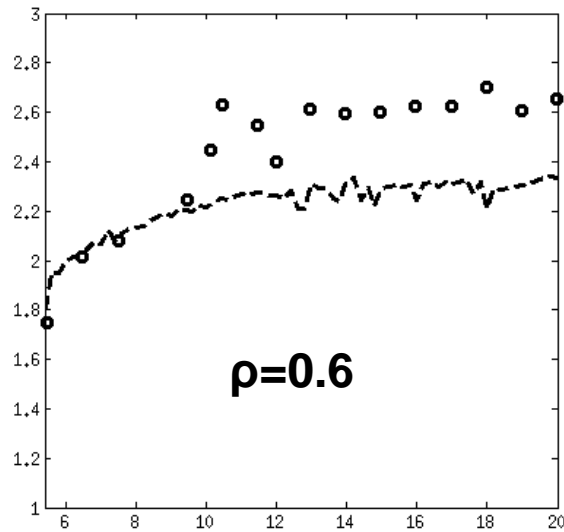
- 3 resistive times from 4s to 20s
- q profiles (MSE data) only available from 13s
- q initial condition at 5.54s taken from shot 77821 (identical to shot 77280 only one pini configuration of difference)
- q MSE data for shot 77281 from 5.54s up to 12s
- Ti profile not available from $t=12s$. For the simulation it is fixed from that time

Shot 77280



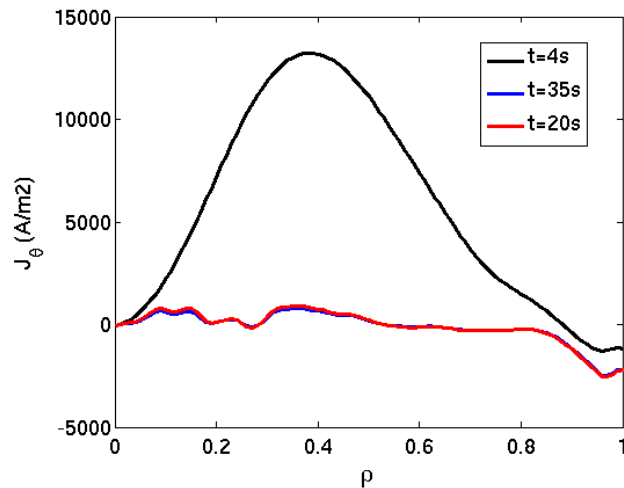
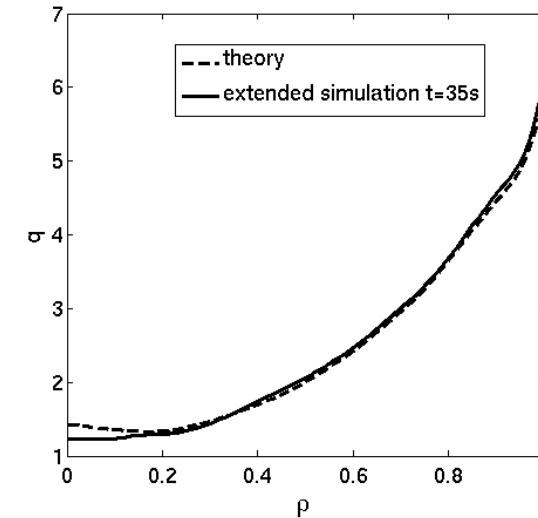
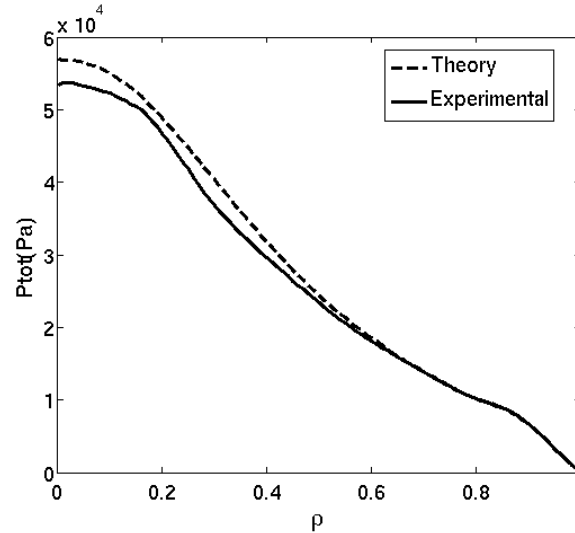
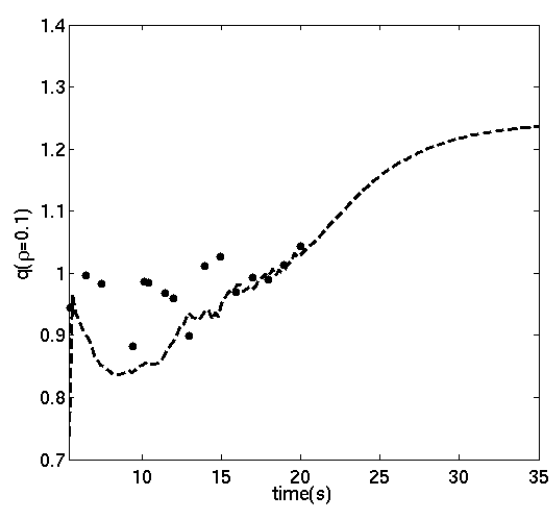
- Comparison between experimental I_i (solid) and simulated (dashed)
- Evolution of q profile at $r=0.1$ and $r=0.2$ and comparison with MSE data
- Some MHD before $t=14s$ affects q profile. After that the agreement is much better

Shot 77280



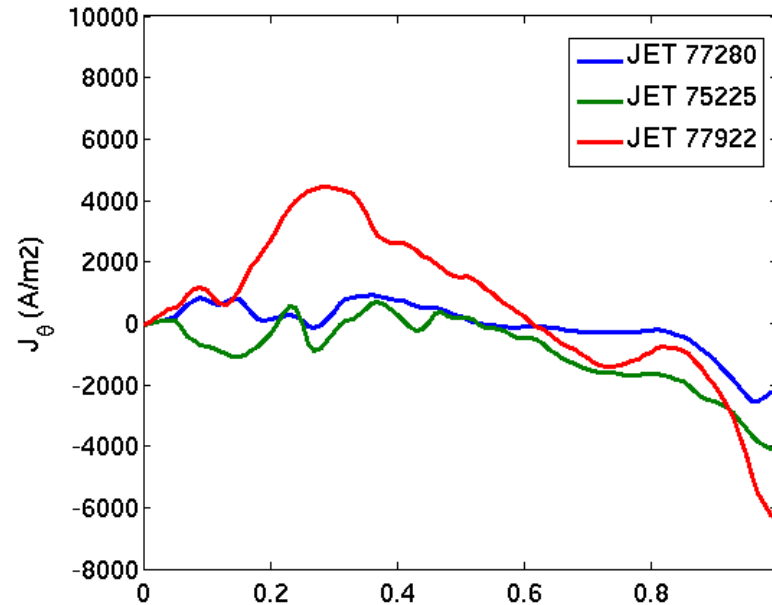
- Evolution of q profile at $r=0.6$ and comparison with MSE data
- Comparison between interpretative q profile and MSE at $t=13s$
- Comparison between interpretative q profile and MSE at $t=20s$ (end of shot)

Shot 77280



- The simulation has been extended up to 35s in order to check the steady-state solution
- The q profile is above 1 and the poloidal current is very close to zero and flat
- The total pressure and q profile obtained are very similar to those obtained from the $j_{pol}=0$ condition

Shot 77280



- The poloidal current follows the same trend as for others hybrids scenarios on JET, JT60U etc
- For shot 77280 is very similar to shot 75225, both at low density and low pedestal

Conclusions

- The evolution of q profile well simulated with neo-classical theory, mainly when no MHD is present
- The length of the pulse does not seem to affect the validity of neo-classical theory
- The steady-state q profile has $q > 1$ everywhere
- $J_{pol} \approx 0$ as expected from well sustained hybrid scenarios
- The q profile and pressure profile are in agreement to those expected from $J_{pol} = 0$

