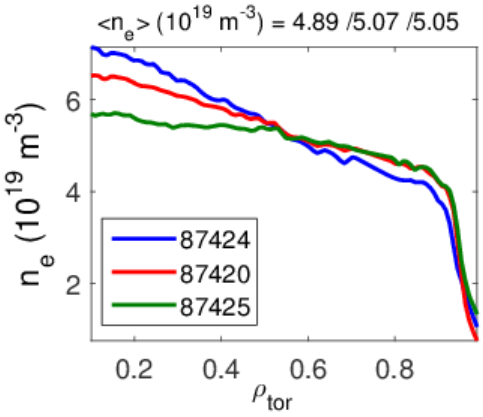
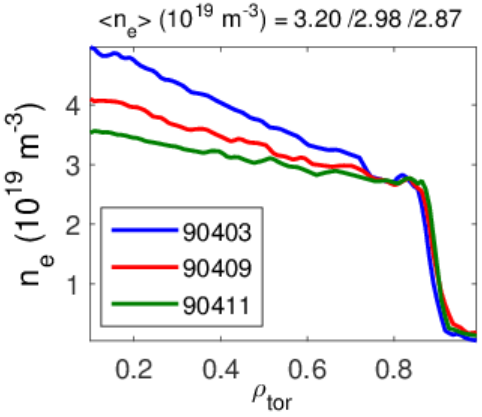
Both the Determined Transport Coefficients and Transport+GK Modelling Indicate NBI Fuelling to Be Dominant Contributor to Density Peaking

- Particle transport extensively studied by performing several dimensionally matched collisionality scans in JET
- The following 4 separate 3-point υ^* scans were performed: (i) high power ELMy H-mode featuring low β, (ii) hybrid like high β plasma, (iii) ELMy H-mode plasma in Hydrogen and (iv) L-mode with carbon wall
- Density peaking increases with decreasing υ^* in all H-mode scenarios, but not in L-mode
- Experimentally determined particle transport coefficients suggest that NBI fueling is main contributor to the observed density peaking
- Supported by GLF23 gyro-kinetic simulations
- These results extrapolate to future tokamaks in such a way that density peaking may be quite moderate in low collisionality regimes in the absence of core particle sources

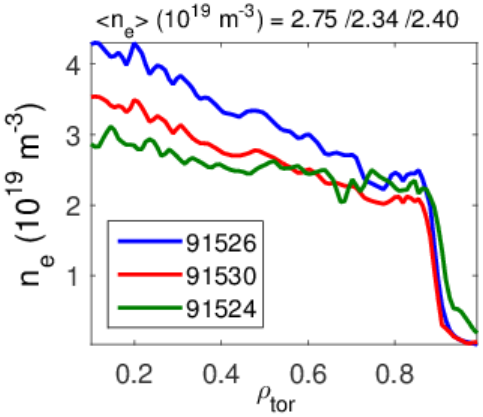
ELMy H-mode



Hybrid-like plasma



ELMy H-mode in Hydrogen



L-mode plasma