Reduction of Asymmetric wall force in JET and ITER including Runaway Electrons

ΔF_x, $\pi B \Delta M_{IZ}$, vs. τ_{CQ}/τ_{wall}

Simulated asymmetric wall force ΔF_x, and estimated wall force are shown in solid curves. Points "MGI" are all JET shots "VDE+MGI" with ILW, 2011-2016. The dots on the right are RE shots "MGI+Runaway" shots in the database.
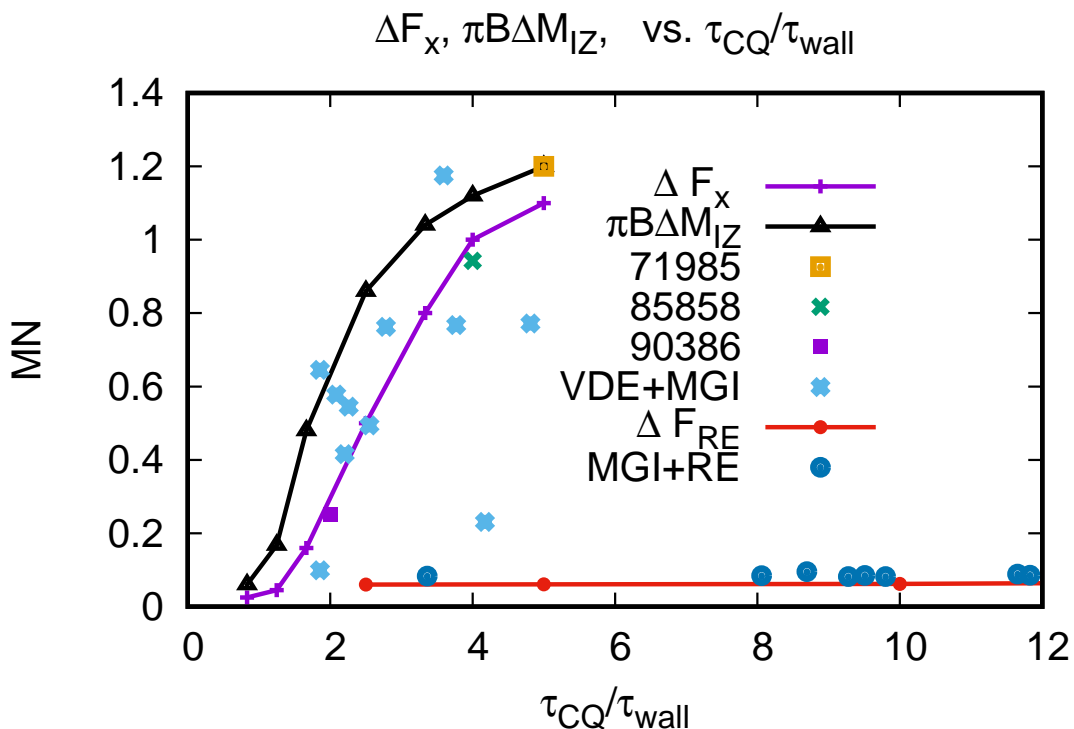
- Simulations of asymmetric wall force with M3D 3D MHD code are consistent with JET data.
- JET asymmetric wall force decreases with ratio of CQ time to resistive wall time, τ_{CQ}/τ_{wall}.
- ITER is in small τ_{CQ}/τ_{wall} regime, where asymmetric wall force and halo current are small.
- Runaway electrons (REs) in JET produce small asymmetric wall force even with $\tau_{CQ} >> \tau_{wall}$.
- In ITER, the wall force depends on the ratio of the maximum RE current to initial current. If $I_{RE}/I_{p0} \approx 1$, the force can be large.

JET

HRS Fusion