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**Qualifying The Hybrid Scenario for ITER at JET** EMMANUEL JOFFRIN, Association EURATOM-CEA, J. HOBIRK, R.J. BUTTERY, JET-EFDA COLLABORATION — The hybrid scenario is an attractive alternative regime for ITER allowing long pulse operation with little or no loss of performance. New simulations from JET indicate fusion gains  $>10$  and pulses lengths of 1000-3000s in ITER. One of the key questions is whether the hybrid scenario is a new scenario in a confinement sense or if the main benefit is an improved MHD stability allowing for operation at higher beta than the baseline scenario. Analysis with Weiland and GLF23 models indicate little difference in core transport processes –  $H_{IPB98y2}$  factors of  $\sim 1.2$  in JET might be an artefact of a too-negative  $\beta$  dependence in the scaling law. Controlled comparisons between the regimes are underway to test this and explore scaling with  $\beta$ . Most hybrid regime discharges are at low collisionality where other studies have identified density peaking effects. This may raise the performance but may also cause impurity accumulation. New modelling shows that this can be ameliorated by electron heating driving TEM instabilities. Studies will test this thesis and also explore extension of the parameter space to low  $q_{95}$ , high density, high  $\beta$ , and the physics of long pulse operation.

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