Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Toward the stationary operation at high β_N at JET: experiments and modelling[1] I. VOITSEKHOVITCH, C.D. CHALLIS, C. GIROUD, UKAEA UK, R.V. BUDNY , D. MCCUNE, PPPL USA, P. BURATTI, ENEA, E. JOFFRIN, CEA, T.C. LUCE, GA USA, M. MURAKAMI, ORNL USA, JET EFDA TEAM — Recently, a route to stationary MHD stable operation at high β_N has been explored at JET by optimising the current ramp up, preheat start time and the waveform of NBI power in high triangularity plasmas. Transient $\beta_N \approx 3.5$ and stationary $\beta_N \approx 3$ have been achieved. The results of the analysis of current drive and transport in these discharges can be summarised as: (a) 50-70% of current is driven non-inductively (NI); (b) a half of this current is due to the bootstrap (BS) current; (c) broad BS current profile is produced since the ITB was deliberately avoided; (d) a large contribution to the BS current is due to the ∇Te term; (e) the GLF23 model predicts the temperature profiles within 20% of discrepancy with the data, this model has been benchmarked in ASTRA, ONE-TWO and TRANSP. Based on this analysis the optimisation of high β_N scenario towards fully NI stationary operation by optimising the BS current is investigated in predictive modelling coupling the transport, current diffusion and NBI and including the feedback control of β_N. A projection of this regime to ITER will be discussed.

[1]Funded jointly by the UK EPSRC and EURATOM.

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Date submitted: 22 Jul 2007 Electronic form version 1.4