Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Simulations of dimensionless parameter experiments using theory-based transport models[1] L. LABORDE, D. MCDONALD, I. VOITSEKHOVITCH , EURATOM-UKAEA, JET EFDA COLLABORATION — Dimensionless plasma parameter analyses are widely recognized as powerful tools for the study of energy and particle confinement, and also provide key quantities for the estimation of performance in future thermonuclear devices. Here we describe transport modelling of dimensionless parameter experiments using the theory-based models GLF23 and MMM95. Firstly, the β and ν^* dependence of heat transport in the models is determined by running them stand-alone with imposed plasma profiles. In the JET parametric domain used in recent dedicated β scan experiments, MMM95 predicts a β degradation of confinement caused by the ideal MHD ballooning mode, whereas GLF23, which has a critical β value higher than the experimental β range, predicts a weak dependence. Secondly, the models are used in ASTRA predictive simulations of Ti and Te in order to test the capability of the models to reproduce experimental results. Despite a reasonable agreement with experimental profiles, the models sensitivity to the dimensionless parameters mismatch throughout the scan may lead to a wrong interpretation of the results. This is checked by running predictive simulations using modified input parameters in order to correct the mismatch.

[1]Work supported by Euratom and UK EPSRC.

L. Laborde
EURATOM-UKAEA

Date submitted: 18 Jul 2007 Electronic form version 1.4