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Predictive Simulations of Toroidal Momentum Transport in JET A. ERIKSSON, H. NORDMAN, J. WEILAND, P. STRAND, Chalmers University of Technology, Euratom-VR Association, Sweden, T. TALA, Association Euratom-Tekes, VTT, Finland, P. DEVRIES, Euratom/UKAEA Fusion Association, UK, JET-EFDA CONTRIBUTORS TEAM — Predictive simulations of temperature and toroidal momentum profiles were made using the new version of the Weiland model. Here the toroidal momentum transport due to ITG/TE modes is calculated self-consistently and the momentum flux contains a diagonal outward term $(\Gamma_{\rm tor} \sim dV_{\rm tor}/dr)$ and non-diagonal pinch terms (Weiland, Nordman, EPS 2006, P2.186). The model predicts that the Prandtl number χ_{tor}/χ_i is about 1/3 for typical tokamak parameters, in rough agreement with recent results from JET. Predictive JETTO simulations have been performed for JET L-mode, H-mode and hybrid discharges at low and high density. Temperature profiles were well reproduced. Simulations performed with only the diagonal part of the momentum transport under-predicted the toroidal momentum. With the non-diagonal terms included a slight over-prediction of the toroidal momentum was obtained. This may be reduced by including effects of collisions on ITG/TE mode driven momentum transport.

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