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The neoclassical tearing mode: An anomalous transport process SIMON ALLFREY, PAVEL POPOVICH, STEVEN COWLEY, CMPD, UCLA — The Neoclassical tearing mode (NTM) is one of the key determinants of tokamak plasma transport. The understanding of stability and transport effects in tokamak plasmas is of crucial importance for the design of fusion devices like ITER. A fully consistent island evolution model should include turbulent (anomalous) transport for the correct calculation of *e.g.* radial fluxes and anomalous viscosity (which determines island rotation and hence the stabilizing or destabilizing role of the polarization current). As a first step and a "proxy" for turbulent transport, we use a neoclassical model. A neoclassical description allows us to develop a closed model that both consistently includes transport effects on the island growth and provides the appropriate basis for the inclusion of micro-turbulent transport (see [1]). The 'true' (anomalous) fluxes can be obtained from a flux-tube turbulence code. The separation of scales (turbulence smaller than the island) and times (turbulent transport faster than the island evolution) allows us to consider the island as a large (relative to the turbulence length scale) and slowly evolving structure for which local flux-tube calculations of transport is appropriate.
[1] P. Popovich, S.J. Allfrey and S.C. Cowley, 'Transport and the neoclassical tearing mode: Slab geometry' (this conference).

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