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Modeling anomalous radial transport in kinetic transport codes¹ K. BODI, S.I. KRASHENINNIKOV, UCSD, R.H. COHEN, T.D. ROGNLIEN, LLNL, ESL TEAM — Anomalous transport is typically the dominant component of the radial transport in magnetically confined plasmas, where the physical origin of this transport is believed to be plasma turbulence. A model is presented for anomalous transport that can be used in continuum kinetic edge codes like TEM-PEST, NEO and the next-generation code being developed by the Edge Simulation Laboratory. The model can also be adapted to particle-based codes. It is demonstrated that the model with a velocity-dependent diffusion and convection terms can match a diagonal gradient-driven transport matrix as found in contemporary fluid codes, but can also include off-diagonal effects. The anomalous transport model is also combined with particle drifts and a particle/energy-conserving Krook collision operator to study possible synergistic effects with neoclassical transport. For the latter study, a velocity-independent anomalous diffusion coefficient is used to mimic the effect of long-wavelength ExB turbulence.

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