Abstract Submitted
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Transport of Fusion Alpha Particles in ITER Scenarios[1] E.M. BASS, UCSD, R.E. WALTZ, GA — We predict the fusion-born alpha particle density in steady-state and hybrid (reverse shear) ITER scenarios with an integrated 1D transport model [1]. The model combines "stiff" critical gradient alpha-driven Alfvén eigenmode (AE) transport with a quasilinear approximation of microturbulent transport [2]. In an ITER baseline case [3], AE transport is found to redistribute alphas within the core but not propagate to the loss boundary. The remaining microturbulence at the edge causes negligible alpha-channel energy flux there (neglecting ripple loss). We set the AE stiff transport critical gradient threshold at $g_{AE} = g_{ITG}$, below which microturbulence can nonlinearly suppress AE transport [4], and the more stringent condition $g_{AE} = 0$.

[1] R.E. Waltz and E.M. Bass, "Prediction of the fusion alpha density profile in ITER from local marginal stability to Alfven eigenmodes," accepted for Nucl. Fusion
[2] C. Angioni et al., Nucl. Fusion **49**, 055013 (2009)
[3] J.E. Kinsey et al., Nucl. Fusion **51** 083001 (2011)
[4] E.M. Bass and R.E. Waltz, Phys. Plasmas **17**, 112319 (2010)

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