Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Microturbulent transport of alpha particles, coupled in radius and energy GEORGE WILKIE, MATT LANDREMAN, Univ of Maryland-College Park, IAN ABEL, Princeton University, WILLIAM DORLAND, Univ of Maryland-College Park — Previous work[1] has shown that, to reliably estimate the turbulent flux of alpha particles, one must use the correct equilibrium distribution function. Futhermore, even the assumption that transport and collisions occur on seperate timescales is called into question, especially around the critical speed. Transport-modification to the distribution of alpha particles can therefore have a significant effect on the alpha-ion heating rate, essential for a burning plasma. We have developed a novel technique that takes advantage of the linearity of the gyrokinetic equation for trace species, allowing one to obtain the global coupled radius-energy transport of fusion-born alpha particles. Here, we show the adjustment to the alpha heating profile as modified by microturbulence for an ITER-like H-mode, and compare to several other transport models.

[1]Wilkie, Abel, Highcock, Dorland. "Validating modelling assumptions of alpha particles in electrostatic turbulence." *Journal of Plasma Physics*, **81**:905810306 (2015)

George Wilkie
Univ of Maryland-College Park

Date submitted: 24 Jul 2015 Electronic form version 1.4