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Transport of Energetic Ions Due to Interaction With Microturbulence in DIII-D[1] D.C. PACE, W.W. HEIDBRINK, Z. LIN, W. ZHANG, U. California-Irvine, G.R. MCKEE, U. Wisconsin-Madison, M. MURAKAMI, J.M. PARK, ORNL, C.C. PETTY, M.A. VAN ZEELAND, General Atomics — Cross-field diffusion of energetic ions due to microturbulence is observed during neutral beam injection in the DIII-D tokamak. The energetic ion energy spectrum and radial density profile are measured with fast-ion D_α, neutron detection, and motional Stark effect systems. DIII-D discharges study the range $5 < E/T_e < 20$, where E is the energy of the energetic ions injected by neutral beams and T_e is the electron temperature, in order to test theoretical results [1] that show energetic ion diffusion increasing as this ratio decreases. The parameter space is relevant to energetic ions in present tokamaks and helium ash in ITER. Density fluctuations related to the microturbulence are measured with beam emission spectroscopy and are consistent with ion-temperature gradient and trapped electron modes. Progress on simulating this phenomenon with the gyrokinetic codes GYRO and GTC will be presented.

[1] W. Zhang, et al., Phys. Rev. Lett. **101** (2009) 095001.

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