Real geometry gyrokinetic PIC computations of ion turbulence in advanced tokamak discharges with SUMMIT/PG3EQ_NC[1] JEAN-NOEL LEBOEUF, VIKTOR DECYK, TERRY RHODES, UCLA, ANDRIS DIMITS, DAN SHUMAKER, LLNL — The PG3EQ_NC module within the SUMMIT Gyrokinetic PIC FORTRAN90 Framework makes possible 3D nonlinear toroidal computations of ion turbulence in the real geometry of DIII-D discharges. This is accomplished with the use of local, field line following, quasi-ballooning coordinates and through a direct interface with DIII-D equilibrium data via the EFIT and ONETWO codes, as well as Holger Saint John's PLOTEQ code for the (R, Z) position of each flux surface. The effect of real geometry is being elucidated with CYCLONE shot #81499 by comparing results from PGEQ_NC to those of its circular counterpart. The PG3EQ_NC module is also being used to model ion channel turbulence in advanced tokamak discharges # 118561 and 120327. Linear results will be compared to growth rate calculations with the GKS code. Nonlinear results will also be compared with scattering measurements of turbulence, as well as with accessible measurements of fluctuation amplitudes and spectra from other diagnostics.

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