

Abstract Submitted  
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**Extension of XGC kinetic simulation codes to magnetic mirror configurations** G. BATEMAN, A.Y. PANKIN, A.H. KRITZ, T. RAFIQ, Lehigh U., G.Y. PARK, S. KU, C.S. CHANG, NYU Courant Institute, W. HORTON, J. PRATT, UT Austin, IFS — The XGC codes, developed to simulate the edge regions of tokamak plasmas, are modified to carry out kinetic simulations of axisymmetric magnetic mirror configurations. The XGC codes are particle in cell kinetic codes that include a virtual sheath condition where magnetic field lines run into end plates. The XGC1 code is a fully five dimensional kinetic code that is used to investigate turbulence, while the faster XGC0 code uses the axisymmetric average electrostatic potential in order to simulate charged particle drifts, losses and collisional effects. Kinetic electron computations, neutral beam injection, atomic physics and the effects of thermal neutrals are included in the XGC codes. Changes are being made to allow the XGC codes to accept mirror equilibria and to run without a toroidal magnetic field component. The XGC0 code will be used to compute particle dynamics, electrostatic potentials, and moments of the distribution functions including plasma flows in mirror configurations.

[1] C.S. Chang, S. Ku, H. Weitzner, Phys. Plasmas **11** (2004) 2649

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