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Double-weight scheme for gyrokinetic simulation of electromagnetic instabilities in tokamaks[1] EDWARD STARTSEV, WEI-LI LEE, WEIXING WANG, Princeton Plasma Physics Lab, ZHIXIN LU, None — An application of recently developed perturbative particle simulation scheme for finite-β plasmas in the presence of background inhomogeneities is presented. The scheme uses two delta-f weights carried by each particle to represent particles density and pressure. Use of separate weight to represent particle pressure allows to alleviate cancelation problem in finite-β gyrokinetic simulations with fully kinetic electrons. Recently, we have successfully used the new double-weight scheme for simulation of linear tearing and drift-tearing modes, in both collisionless semi-collisional regimes in sheared slab and high-aspect ratio cylindrical cross-section tokamak geometries. Here, we present further development of this scheme which now includes effects of magnetic drifts for the simulation of linear semi-collisional micro-tearing (MTM) and kinetic ballooning (KBM) modes in realistic aspect ratio cylindrical cross-section tokamak using the modified turbulence code GTS.

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Weixing Wang
Princeton Plasma Physics Lab

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