

Abstract Submitted  
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**Full f gyrokinetic turbulence simulations including polarization drift** SUSAN LEERINK, Aalto University, JUKKA HEIKKINEN, VTT, SALOMON JAHUNEN, TIMO KIVINIEMI, TUOMAS KORPILO, Aalto University, VICTOR BULANIN, St.-Petersburg State Polytechnical University — Elmfire is a global gyrokinetic full f electrostatic particle-in-cell (PIC) code designed for first principle transport simulations of tokamak plasmas including both kinetic ions and electrons. It is based on a gyrokinetic model which includes the polarization drift implicitly in the guiding center equations. The derivation of the equations of motion, the Poisson equation as well as the energy, momentum, and angular momentum conserving rules will be presented. The code has successfully passed neoclassical and code benchmarks and conservation rules have proven to be satisfied. Experimental validation of poloidal velocity is performed by means of a synthetic Doppler reflectometry diagnostic. The experimental FT-2 Doppler reflectometer power spectrum shows good agreements with the synthetic diagnostic in both the Doppler shift as well as the width of the power spectrum, indicating comparable rotation and spreading of the turbulence at several radial positions.

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