Self-consistent gyrokinetic Vlasov-Maxwell system for nonlinear processes in plasmas PENGFEI LIU, Univ of Sci Tech of China, WENLU ZHANG, CHAO DONG, Institute of Physics, CAS, JINGBO LIN, Univ of Sci Tech of China, ZHIHONG LIN, University of California, Irvine — A self-consistent gyrokinetic Vlasov-Maxwell system which is capable of studying phenomenons related to ponderomotive force is developed with long wavelength approximation and background Maxwellian distribution in the present of electromagnetic fluctuations. According to the ordering analysis, the introduction of quadratic Hamiltonian would raise the order of the Vlasov-Maxwell system. Therefore, guiding-center transformation is proceeded up to the order of ϵ_B^2, and gyrocenter transformation is proceeded up to the order of ϵ_δ^2. And higher order terms of the first order gyrocenter Hamiltonian $\bar{H}_1$ and gauge field S_1 are brought back. In this way, effects are also presented which are resulted from the inhomogeneities of equilibrium profile but the curvature of equilibrium magnetic field on the moments of distribution.

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