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Research Topic	Research on nonlinear gyrokinetic theory
A brief introduction of your research topic	Based on Lie transform gyrokinetic theory, the Vlasov-Maxwell system is derived through using pullback and pushforward transformation. And a simulation model which is suit for the high frequency radio frequency waves is constructed and generalized to Tokamak geometry. In order to self-consistent describe the nonlinear problems, a second order gyrokinetic system is developed with the second order guiding-center and gyrocenter phase space transformation.
Publications:	P. Liu, W. Zhang, C. Dong, J. Lin, Z. Lin, and J. Cao, Nuclear Fusion 57, 126011 (2017).
Talks:	Pengfei Liu, Wenlu Zhang, Jingbo Lin, et al. Gyrokinetic Simulation Model for High Frequency Processes in Toroidal Geometry. 5th Conference on Magnetic Fusion Theory and Simulation, Beijing, 2017
Conference posters:	Pengfei Liu, Jinbo Lin, Wenlu Zhang, and Zhihong Lin, A closed Vlasov-Maxwell model for high frequency process in plasma, 57th Annual Meeting of the APS DPP, 2015. Pengfei Liu, Wenlu Zhang, Jinbo Lin and Chao Dong, Moments of gyrocenter distribution, 43rd EPS Conference on Plasma Physics, 2016. Pengfei Liu, Wenlu Zhang, Jinbo Lin and Chao Dong, A closed Vlasov-Maxwell model for high frequency nonlinear process in plasma,, 10th West Lake International Symposium on Magnetic Fusion & 12th Asia Pacific Plasma Theory Conference, 2016. Pengfei Liu, Wenlu Zhang, Jinbo Lin and Chao Dong, A nonlinear gyrokinetic Vlasov-Maxwell system for high-frequency simulation in toroidal geometry, 58th Annual Meeting of the APS DPP, 2016.