

# A parareal algorithm for highly oscillating Vlasov and Vlasov-Poisson equations

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This work is concerned with solving numerically multi-scale in time Vlasov-type models, by means of a specific version of the parareal algorithm. The novelty consists in using reduced models, obtained from the two-scale convergence theory, for the coarse solving. The reduced models are useful to approximate the original Vlasov model at a low computational cost since they are free of high oscillations. We illustrate this strategy with numerical experiments based on long time simulations of charged particles beams in strong magnetic/electric fields. We provide an analysis of the efficiency of the parareal algorithm in terms of speedup.