

# An exponential integrator for highly oscillatory Vlasov-Poisson systems

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In the framework of Particle-In-Cell methods for 2D and 4D phase space Vlasov-Poisson systems depending on a small parameter, we propose a time-stepping method which is numerically uniformly accurate when the parameter goes to zero. Based on an exponential time differencing approach, the scheme is able to use large time steps with respect to the typical size of the fast oscillations of the solutions.