

The Vlasov-Poisson-Boltzmann equation with polynomial perturbation near Maxwellian

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We consider the Vlasov-Poisson-Boltzmann equation without cutoff near Maxwellian, and we prove the global existence, uniqueness, and large time behaviour for solutions in a polynomial weighted space $H_{x,v}^2(\langle v \rangle^k)$ for some constant $k > 0$ large enough. In this talk, we extend former results in $H_{x,v}^N(\mu^{-1/2})$ to polynomial weighted space $H_{x,v}^2(\langle v \rangle^k)$. The proof combines works by Y. Guo and the semigroup method introduced by M. P. Gualdani, S. Mischler, and C. Mouhot. In fact, our proof can be also be used in the Landau type equation.