Sharp regularity estimates for the collisional kinetic equations

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时　间：2024年3月15日 下午14：00-15：00

地　点：文萃楼F101

摘要：We investigate the smoothing estimates for the non-cutoff Boltzmann equation with soft potentials as well as Landau-Coulomb equation in L^2 framework. We address the problem in two different settings: (i). When the initial data only possesses finite polynomial moment, the solutions to the Boltzmann equation have only finite Sobolev regularity while the solutions to the Landau-Coulomb have the infinite Sobolev regularity but with negative weight. (ii). When the initial data have exponential moments, the solutions belong to the Gevrey class with an optimal index that depends on the exponential moment for any positive time.

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