

Stability of Stationary Solutions to the Nonisentropic Euler--Poisson System in a Perturbed Half Space

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The main concern of this talk is to mathematically investigate the formation of a plasma sheath near the surface of nonplanar walls. We study the existence and asymptotic stability of stationary solutions for the nonisentropic Euler-Poisson equations in a domain of which boundary is drawn by a graph, by employing a space weighted energy method. Moreover, the convergence rate of the solution toward the stationary solution is obtained, provided that the initial perturbation belongs to the weighted Sobolev space. Because the domain is the perturbed half space, we first show the time-global solvability of the nonisentropic Euler-Poisson equations, then construct stationary solutions by using the time-global solutions.

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