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Quasineutral limit of an Euler-Poisson system arising from plasma physics. (English)

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Summary: We study the quasineutral limit of an Euler-Poisson system arising from plasma physics i.e. the limit when the Debye length tends to 0 of a nonlinear hyperbolic system coupled with a nonlinear elliptic equation. The proof uses pseudodifferential energy estimates techniques, in order to jutify classical limits in small time, for strong solutions.

MSC:

82D10 Statistical mechanics of plasmas
76X05 Ionized gas flow in electromagnetic fields; plasmic flow
35Q35 PDEs in connection with fluid mechanics

Keywords:

one-dimensional isothermal plasma; quasineutral limit; Euler-Poisson system; Debye length; nonlinear hyperbolic system; pseudodifferential energy estimates

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