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Section:

10. Partial Differential Equations

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Existence and asymptotic behavior of weak solutions of the drift diffusion equations for semiconductors

Global existence of solutions to the transient drift-diffusion equations coupled with Maxwell's equations, which describe the charge transport in semiconductors, is shown. Uniqueness of solutions in the two-dimensional case follows from H^s and L^p- regularity results. Here a H^{1+s}-regularity result for elliptic equations with mixed boundary conditions is used.
Furthermore, is shown under a suitable smallness assumption that the solutions converge for $t \to \infty$ to stationary states.

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