

On the Relation between Different Macroscopic Semiconductor Models

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Abstract: The main objective of this presentation is to show various limits in the hierarchy of macroscopic semiconductor models. In the first part we focus on the small Debye-length asymptotics in the drift diffusion model. The second part is devoted to the small Debye-length and to the small relaxation time asymptotics in the hydrodynamic model for semiconductors. Combining these to limits different models in the hierarchy are obtained. In both parts ideas of the proofs of the corresponding theorems are presented.