

Current transport models for engineering applications

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Due to the decreasing device geometries into the nano-scale regime, models established for industrial engineering applications break down. Various non-local effects gain more and more importance. Numerous hydrodynamic and energy-transport models have been developed which claim to accurately describe these effects. However, some problems inherent to these models have been reported as well. Our most recent investigations indicate that transport models based on six moments of the distribution function are a balanced trade-off between accuracy and complexity. The application of these models to timely semiconductor device simulation and their limitations will be discussed in depth.