Abstract Submitted
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Monte Carlo simulation of degenerate semiconductors[1] MONA ZEBARJADI, University of California, Santa Cruz, CEYHUN BULUTAY, Bilkent University, KEIVAN ESFARJANI, University of California, Santa Cruz, ALI SHAKOURI, University of California,Santa Cruz — A modified algorithm is proposed to include Pauli exclusion principle in Monte-Carlo simulations. This algorithm has significant advantages to implement in terms of simplicity, speed and memory storage. We show that even in moderately high applied fields, one can estimate electronic distribution with a shifted Fermi sphere without introducing significant errors. At high fields, the quasi Fermi level is valley dependent and the free-flights must be coupled to state availability constraints. With this algorithm we are now able to simulate inhomogenous devices accurately, which cannot simulate using traditional methods.

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