

Get Started Developing Tools for nanoHUB.org

As part of the Network for Computational Nanotechnology (NCN), our research group, guided by Mark Lundstrom, specializes in the development of simulation tools that allow researchers to gain insight into critical problems facing today's nanotechnology initiatives. Through this theoretical approach to nanoscience, we seek to gain fundamental understanding of the basics behind these increasingly complex systems. Our primary goal is understanding electronics from the "bottom-up," by which we mean understanding electronic conduction at the atomistic level; then we work toward formulating new simulation techniques, developing a new generation of software tools, and bringing new understanding and approaches into the education of device engineers.

In order to accomplish these goals, we develop and employ in-depth simulation tools that incorporate Monte-Carlo, Non-Equilibrium Greens Function, and Drift-Diffusion computational methods. Our work helps others through the nanoHUB, an online resource dedicated to pioneering the development of nanotechnology from science to manufacturing through innovative theory, exploratory simulation, and novel cyberinfrastructure.

Our group's current research includes development of simulation and modeling tools for nanowire transistor devices, III-V semiconductors, scattering, carbon nanotubes, ballistic transport, and thermoelectrics.

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