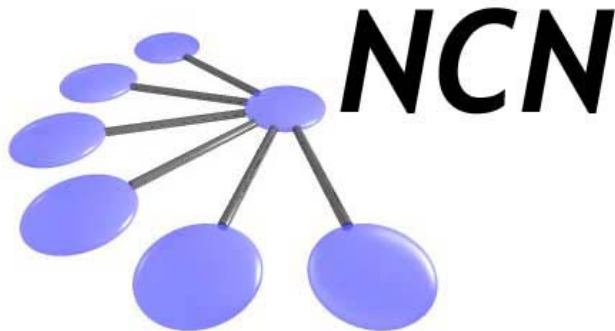


# *Network for Computational Nanotechnology (NCN)*

*Berkeley, Univ. of Illinois, Norfolk State, Northwestern, Purdue, UTEP*

# Nanoelectronic Modeling From Quantum Mechanics and Atoms to Realistic Devices



Ph.D. Short Course  
University of Pisa, Oct. 5-9 2009

Gerhard Klimeck  
Prof. Electrical and Computer Engineering  
Director, Network for Computational Nanotechnology

- Provide fundamental INSIGHT in nano-scale device engineering not detailed math
- Provide venues and education to on-line simulation / nanoHUB
- Content:
  - » Motivation of approaches to semiconductor modeling and simulation
  - » nanoHUB.org
  - » Reminder of some quantum mechanical motivations / fundamentals
  - » Standard quantum scattering theory of transmission
  - » Intro to resonant tunneling diodes
  - » NEGF formulations
  - » NEMO1D - Resonant tunneling diodes with full band structure
  - » NEMO3D - Quantum Dots
  - » NEMO3D – Random Alloys
  - » OMEN – 3d atomistic quantum transport

## **NEMO 1-D**

Roger Lake, Texas Instruments / UC Riverside  
R. Chris Bowen, Texas Instruments / JPL / TI  
Tim Boykin, U Alabama in Huntsville  
Dan Blanks, Texas Instruments  
William R. Frensley, UT Dallas

## **OMEN**

Mathieu Luisier,  
Sunhee Lee, Hoon Ryu, Ben Haley,  
Jean Michel Sellier, Purdue

## **Post Docs / Students / Developers / Consultants:**

Manhua Leng, Chenjing Fernando, Paul Sotirelis, Carlos Salazar-Lazaro,  
Bill McMahon, Daniela Francovicchio, Mukund Swaminathan, Dejan Jovanovic, Rajib Rahman, Seung-  
Hyon Park, Hoon Ryu, Sunhee Lee, Neerav Kharche, Shaikh Ahmed, Muhammad Usman, Marek  
Korkusinski, Samarth Agarwal, Parijat Sengupta, Zhengping Jiang

## **Experimentalists:**

Alan Seabaugh, Ted Moise, Ed Beam, Tom Broekaert,  
Paul van der Wagt, Bobby Brar, Y. Chang (all TI), David Chow (HRL)

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