

## Objective:

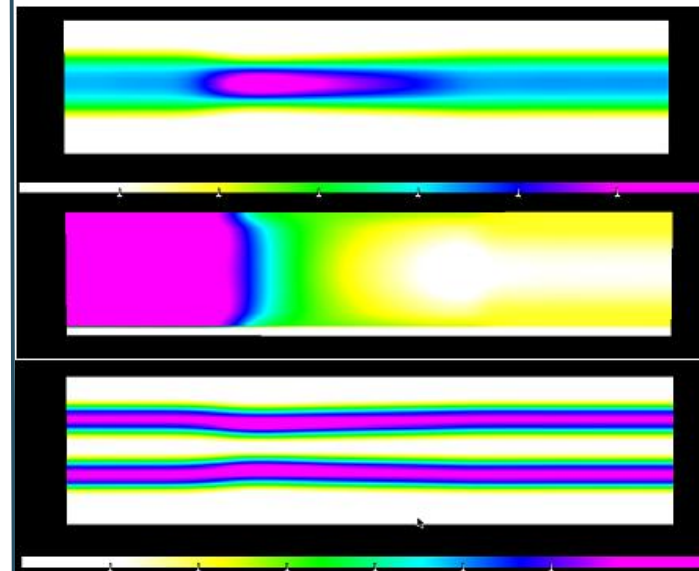
- Development of silicon nanowire simulator with EMA mode space approach.
- Elicit difference between coupled and uncoupled mode space approaches.

## Approach:

- Improved frontend GUI for nanowire code using rappture.
- Full 3D nanowire code base on Fortran 90 with MPI used for parallelization.
- Uncoupled (UMS) and Fast Uncoupled mode space (FUMS) approaches for fast simulation,

## Impact:

- Deeper understanding of mode coupling and when it is important.
- Serving the scientific community with more than 1200 users and 18000 simulation runs.



Coupling for Mode 1

Potential Profile

Coupling for Mode 2

## Result:

- **Nanowire V2.0 installed on nanohub including improved features.**
- *Material Properties.*
- *Crystal Orientation.*
- *3D Eigenfunctions.*
- *1D Electron density.*
- *1D conduction subband profile.*

**Publication:** [Mehrotra, S.R.; Roenker, K.P. \(2007\), "Process Variation Study for Silicon Nanowire Transistors," \*Microelectronics and Electron Devices\*, 2007 IEEE Workshop on: pg. 40--41, 04.](#)