

Objective:

- Extract phonon-limited mobility μ_{ph} in n - and p -type Si NW FETs with different crystal orientations

Approach:

- Tight-binding ($sp^3d^5s^*$) description of the electron/hole properties
- Atomistic Representation of the NWs
- Quantized phonon dispersion (**VFF**)
- Quantum transport with **NEGF**
- **dR/dL** extraction method for μ_{ph}

Results and Impacts:

- μ_{ph} as function of the charge density in the middle of the channel
- **[111]** (**[110]**) less sensitive to electron-phonon scattering in p -type (n -type) devices
- **[110]** best compromise for n - and p -type high performance Si NW FETs

