

Theoretical Analysis of High-field Hole Transport in Germanium and Silicon Nanowires

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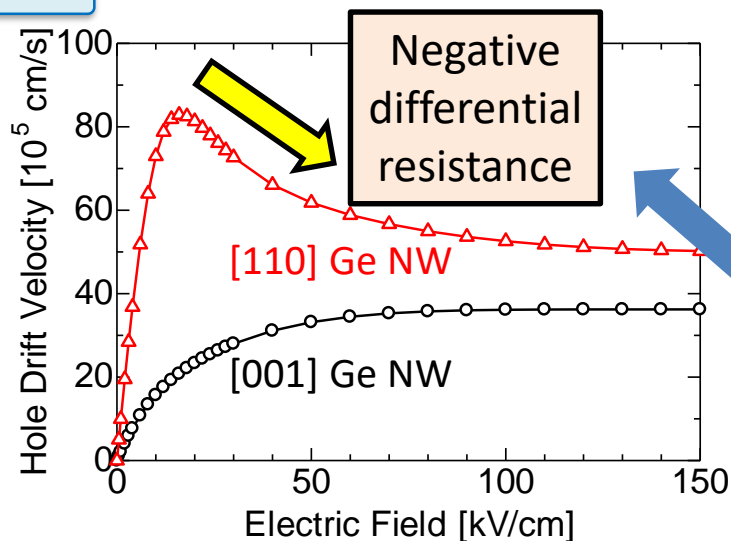
Atomistic calculation and physical understanding of high-field transport in nanowires (NWs)

- ◆ Valence band structure
 - *Tight-binding method*
- ◆ Phonon modes
 - *Valence force field model*
- ◆ High-field transport
 - *Non-linear Boltzmann transport equation*

Structure

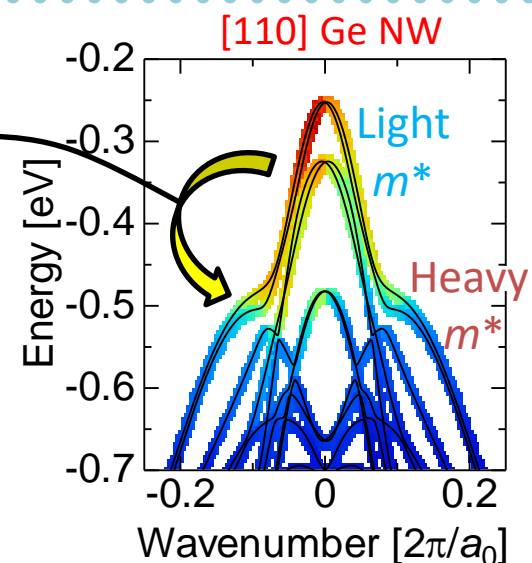
- **Square** cross section
(2 nm x 2 nm for Ge, 1.9 nm x 1.9 nm for Si)
- **[001], [110], [111], and [112]**-oriented NWs

Ge NW



Hole transfer to heavier subbands

Increased average mass



Comparison with Si NWs and impacts of SRS are also discussed on our poster.