Simulating Valleytronics Logic at the Gate Level

Author

ntroduction What is Valleytronics Warning: Quantum Physics

Reversible Logic

Tamper-Evide Processing

Simulating Valleytronics Logic at Gate Level A C++ Library and Example for Building Fully Electric Valleytronic Processors

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ECE 6120: Advanced Microarchitecture Final Presentation

Introduction to Valleytronics

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ntroduction

What is Valleytronics

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Physics

Reversible Logic Tamper-Eviden Valleytronics is an alternative to CMOS logic that takes advantage a unique property of certain classes of semi-metals.

 It is the subject of active research, with isolated circuits being produced, but large-scale production still a few years off.

Valleytronics vs. CMOS

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Logic
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CMOS logic takes advantage of the Pauli Exclusion principle to create diodes and transistors. These allow easy voltage manipulation, but no additional constraints. Valleytronics offers a

- Encryption/Decryption of Off-Chip Memory
- Secure Context Manager

Reversible Logic The Landauer Limit and Beyond

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Verifiable computations need a way to identify and prevent operations from being tampered with.