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Low-cost Fabrication Method for Charge and Current Based Quantum Computing Networks

A low-cost fabrication method uses classical computing to automate and optimize the design of electrostatic gate configurations for reliable semiconductor-based quantum computing networks.

Researchers at Purdue University have developed a low-cost fabrication method for semiconductor-based quantum computing networks. Quantum computer fabrication requires careful design and accurate fabrication to ensure ideal control of the quantum bit states. This technology aids the efforts of engineers by leveraging classical computers to algorithmically search for electrostatic gate configurations with the best control over the quantum bits. Each network requires a unique gate configuration, but new machine searches are not required to reproduce a previous network.

Technology Validation: This technology is in the conceptual stages.

Advantages:

-Simpler design and fabrication of quantum computers

-Low-cost fabrication of quantum computing networks

-Optimizes for control of quantum bit states

Applications:

-Fabrication of quantum computing networks

TRL: 2

Intellectual Property:

Provisional-Patent, 2022-05-06, United States | Provisional-Patent, 2023-05-12, United States | PCT-Patent, 2024-05-10, WO | NATL-Patent, 2025-11-05, United States

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Category
Computing/Quantum Technologies
Artificial Intelligence & Machine Learning/Reinforcement & Federated Learning
Semiconductors/Fabrication & Process Technologies

Authors
Tillmann C Kubis

Further information
Dipak Narula
dnarula@prf.org

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