Matrix Theory in a Simple Quantum Adder

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Matrix Analysis

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Presentation layout

Quantum what?

Some ideas about quantum mechanics.
Bits and qubits. Quantum states. Measurement. Collapsing. Reversible.
Quantum computation? Information?
The big picture.

Terminology

Physics terms and math terms.

Discrete and Quantum Fourier Transform

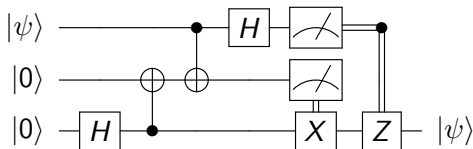Constructing a DFT matrix. Properties of this matrix. Orthonormal basis.

Control-phase gate

Again?

Recap

What did we learn on the show tonight, Craig?
Q-circuit user guide [EF04]
quantum addition of classical numbers [CC16]
Mike and Ike [NC02]
Handbook of Linear Algebra [**?**]
addition on quantum computer [Dra00]

References

📄 AV Cherkas and SA Chivilikhin, *Quantum adder of classical numbers*, Journal of Physics: Conference Series, vol. 735, IOP Publishing, 2016, p. 012083.

📄 Thomas G Draper, *Addition on a quantum computer.*, arXiv preprint quant-ph/0008033 (2000).

📄 Bryan Eastin and Steven T Flammia, *Q-circuit tutorial*, arXiv preprint quant-ph/0406003 (2004).

📄 Michael A Nielsen and Isaac Chuang, *Quantum computation and quantum information*, 2002.