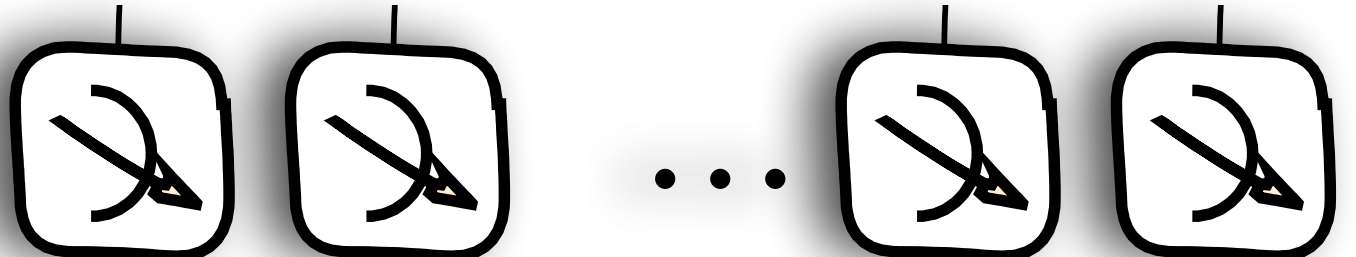

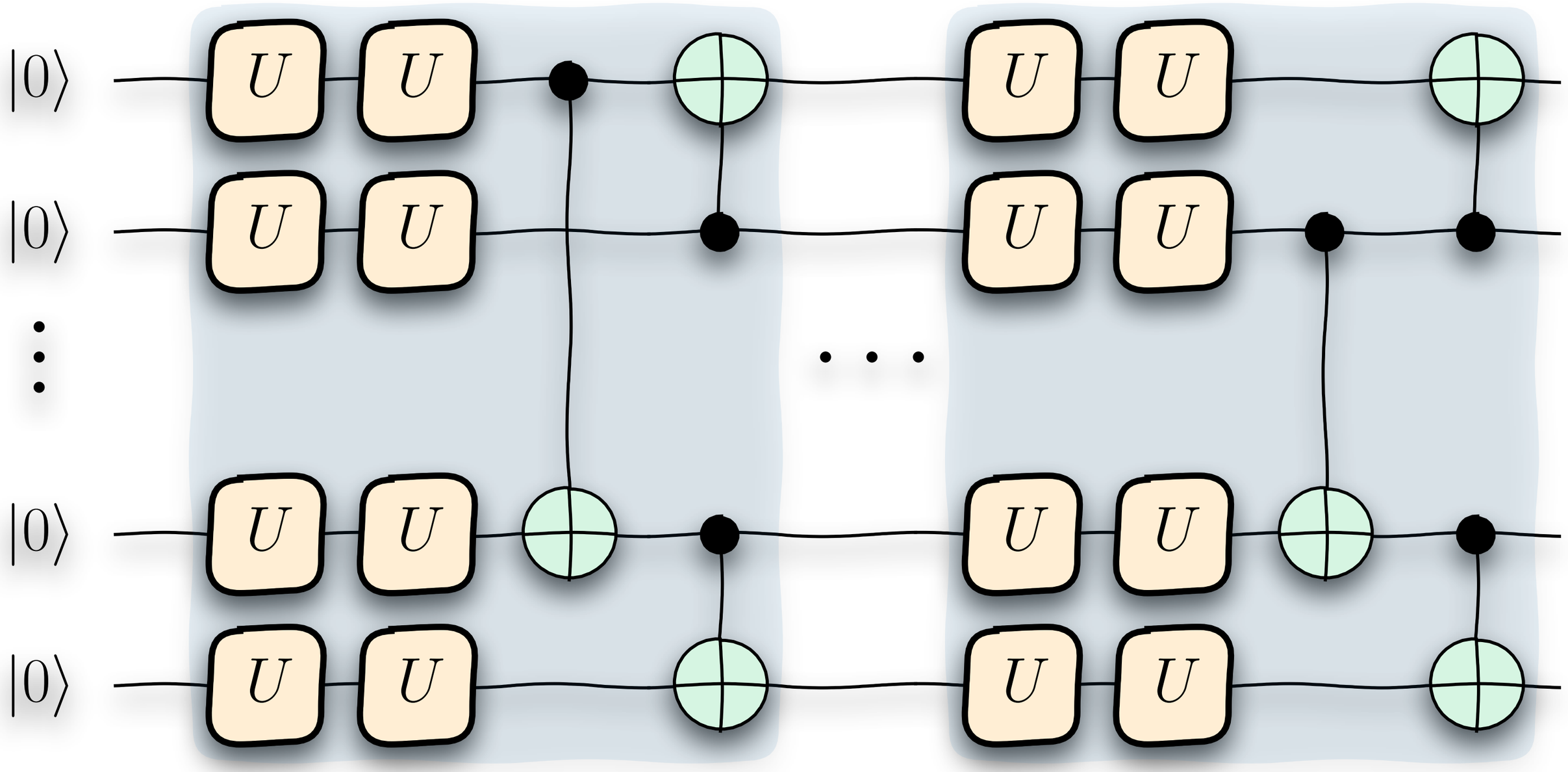
$|0\rangle$
$|0\rangle$
$|0\rangle$
$|0\rangle$
U

Jack Y. Araz

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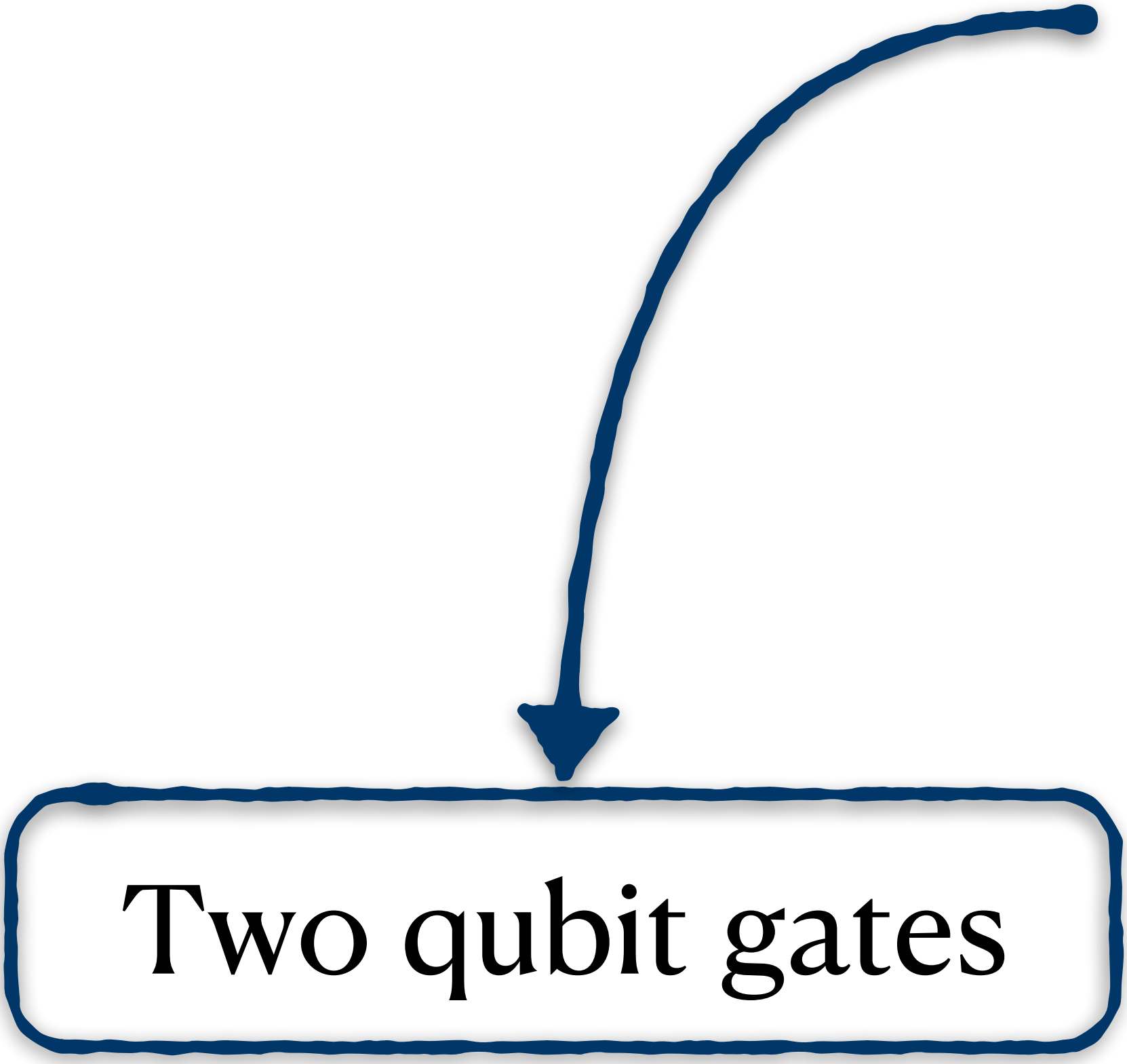
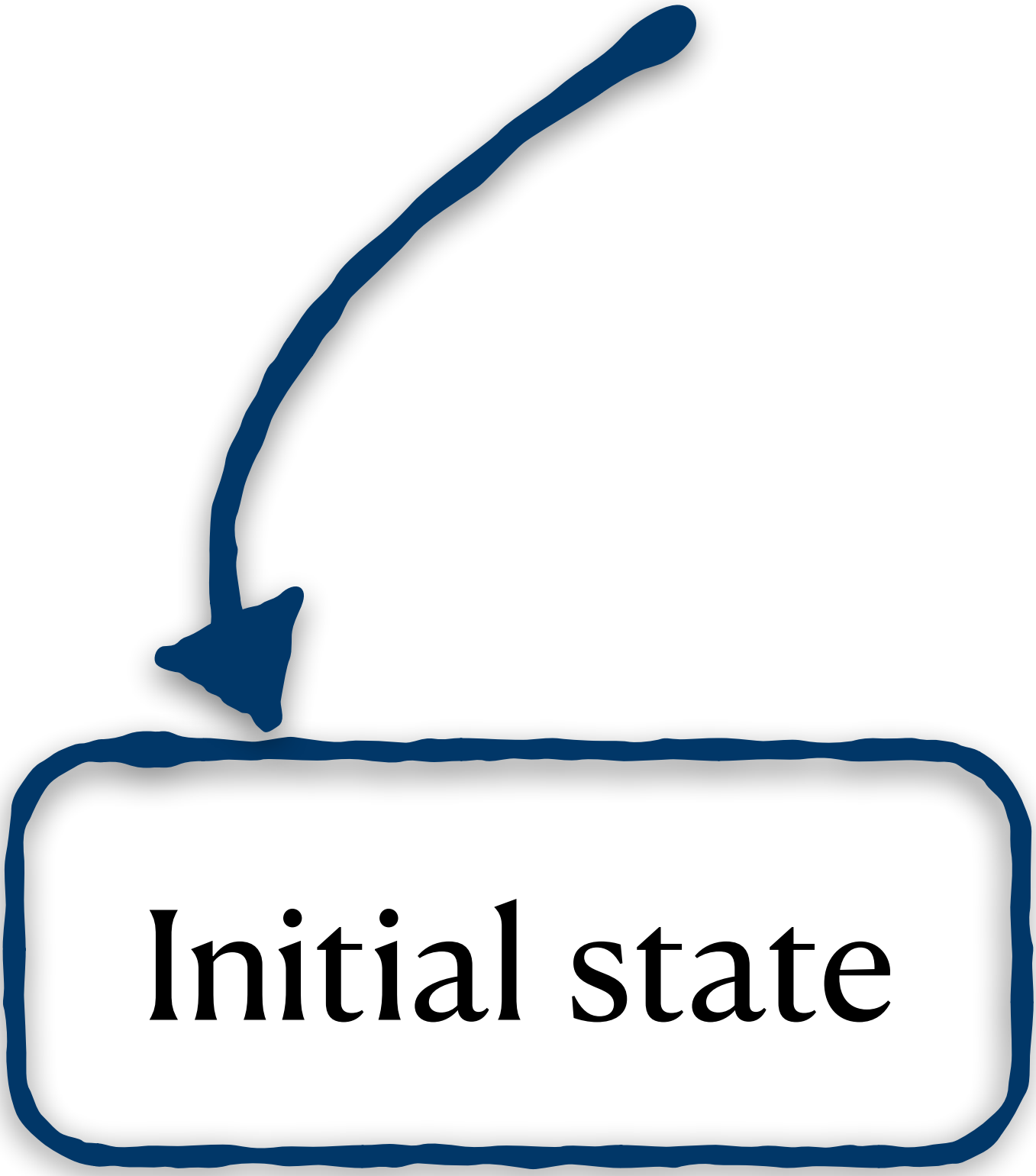
Jefferson Lab
EXPLORING THE NATURE OF MATTER


OLD DOMINION UNIVERSITY
1930

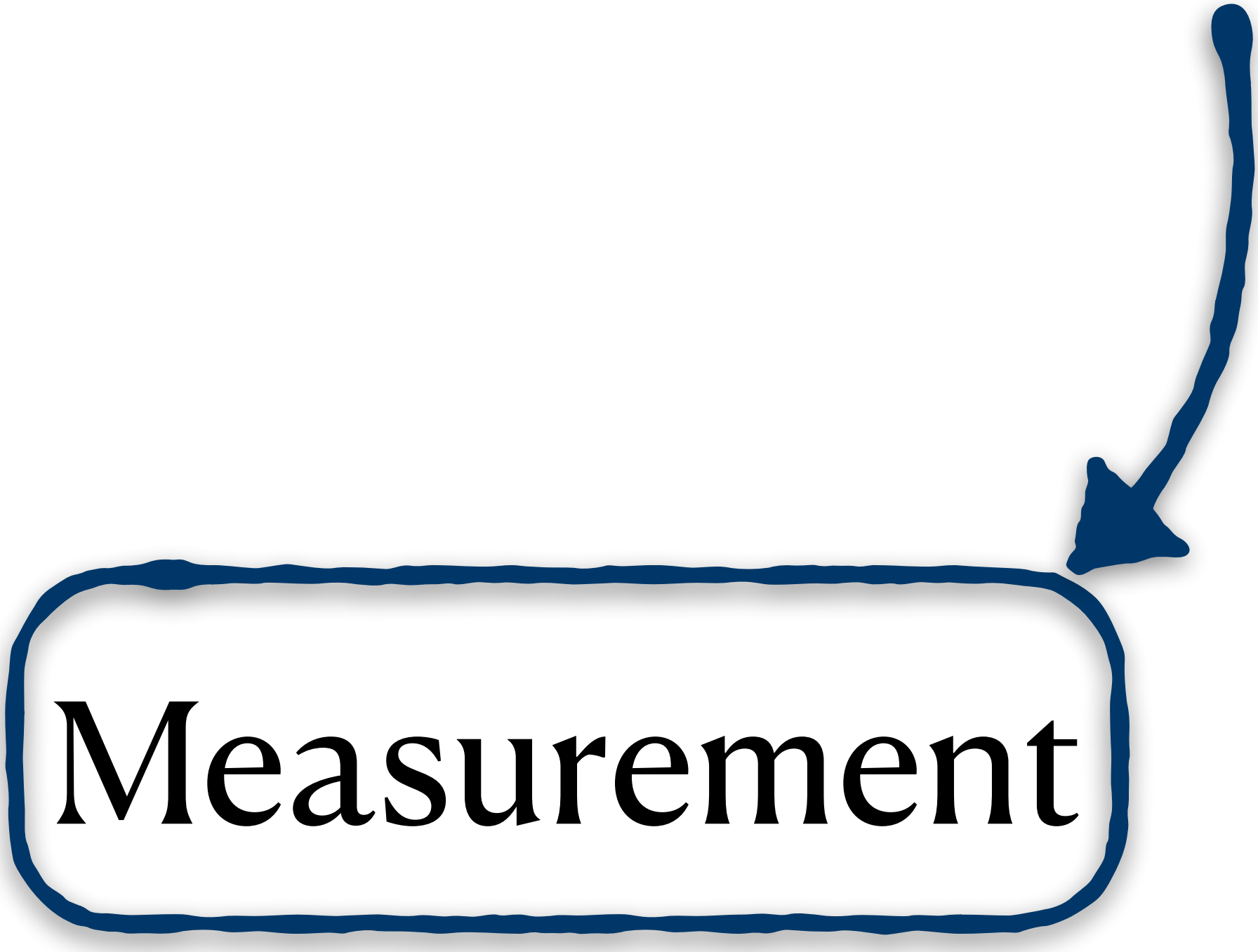

Two qubit gates

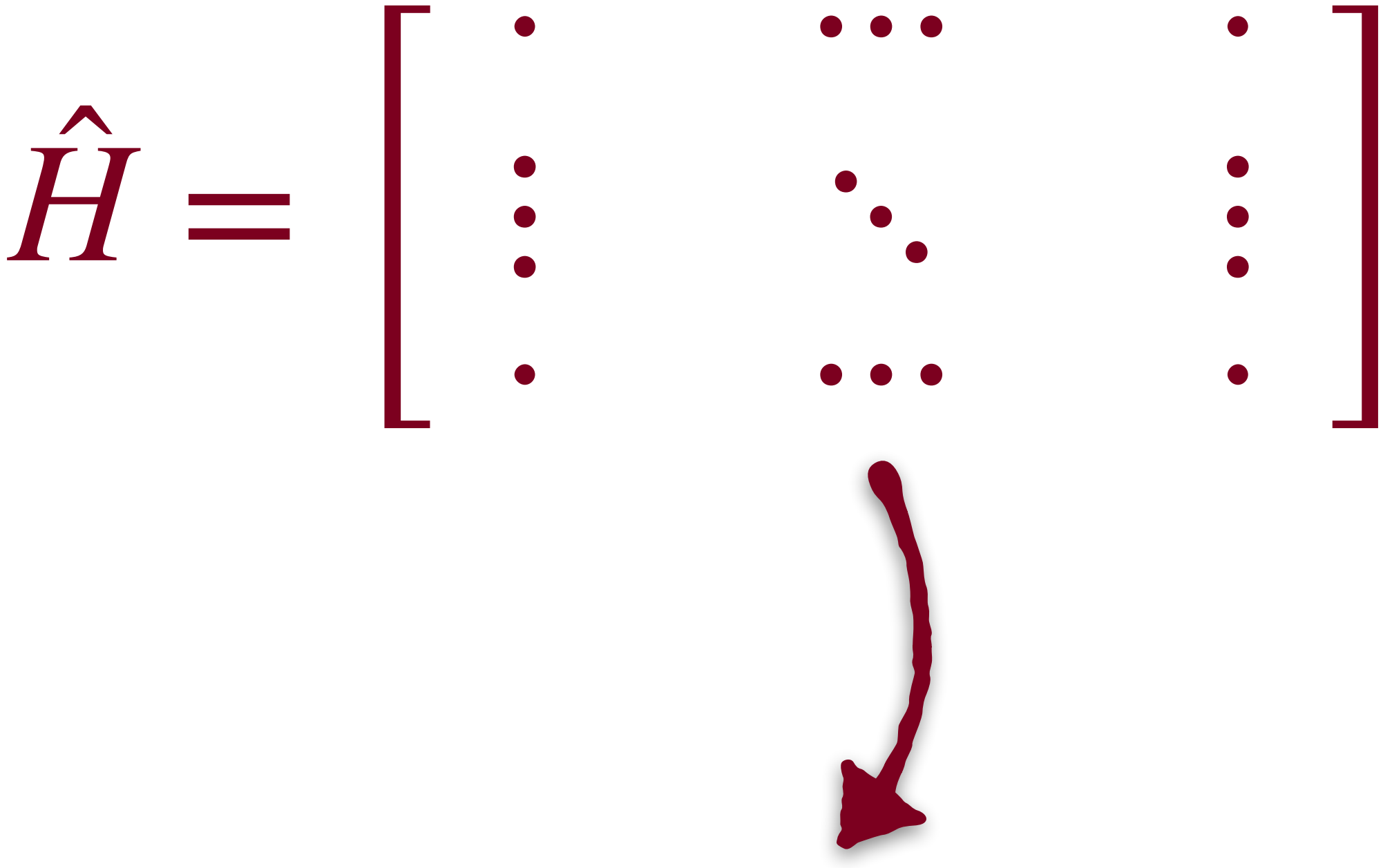

Initial state

State preparation: $U(\theta)\,|0\cdots\rangle$

$$\langle 0\cdots | U^{\dagger}(\theta)\hat{H}U(\theta) | 0\cdots \rangle$$

Make many measurements to construct the average outcome of the state's energy measurements.

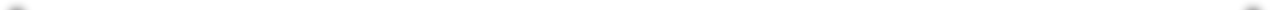

Measurement

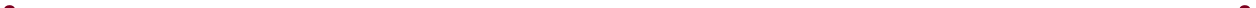


Single Qubit Gates

- U: operations on the Unit sphere
- Pauli matrices: X, Y, Z, I

Further reading:
Nielsen & Chuang;
Quantum Computation &
Quantum Information





State preparation:


$U(\theta) \mid 0 \cdots \rangle$

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