

From classical to good quantum LDPC codes.

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Today.

- Brif Review of Coding.

Today.

- Brif Review of Coding. Tanner and Expander codes.

Today.

- Brief Review of Coding. Tanner and Expander codes.
- Quantum Error Correction Codes.

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- Brief Review of Coding. Tanner and Expander codes.
- Quantum Error Correction Codes.
- Good Classical Locally Testable Codes and Good Quantum LDPC.

Classical Vs Quantum Encoding.

Classical:

110101



Quantum:

110101



Classical Vs Quantum Encoding.

Classical:

100101

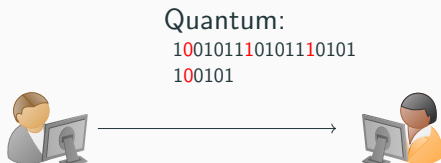
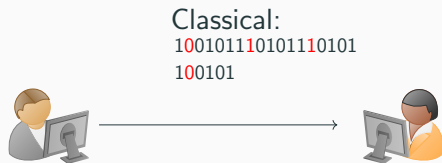


Quantum:

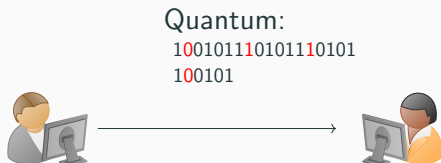
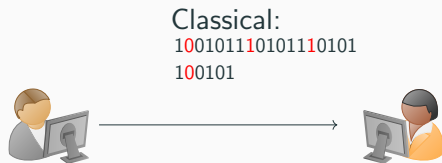
100101



Classical Vs Quantum Encoding.



Classical Vs Quantum Encoding.



Classical Vs Quantum Encoding.

Classical:

$|100101110101110101\rangle$

$|100101\rangle$



Quantum:

$|100101110101110101\rangle$

$|100101\rangle$



Good Classical LDPC Code.

Good Classical LDPC Code.

Good Classical LDPC Code.

Good Classical LDPC Code.

Idea I - (Uncertainty) Clouds as States.

'Idea II' - Tanner Checks are 'Too Much' Interdependence.

'Idea III' - Impossibility of Both C_X, C_Z being Good.

Quantum Tanner Code Construction.

