

From classical to good quantum LDPC codes.

D. Ponnarovsky¹

Master-Exam-Huji.

Faculty of Computer Science
Hebrew University of Jerusalem

Today.

- Brif Review of Coding.

Today.

- Brif Review of Coding. Tanner and Expander codes.

Today.

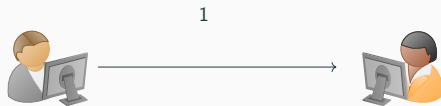
- Brief Review of Coding. Tanner and Expander codes.
- Quantum Error Correction Codes.

Today.

- 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:

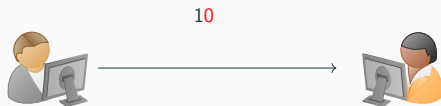


Quantum:



Classical Vs Quantum Encoding.

Classical:



Quantum:



Classical Vs Quantum Encoding.

Classical:



Quantum:



Classical Vs Quantum Encoding.

Classical:

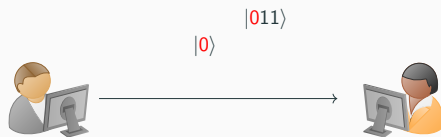


Quantum:



Classical Vs Quantum Encoding.

Classical:

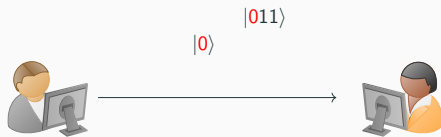


Quantum:

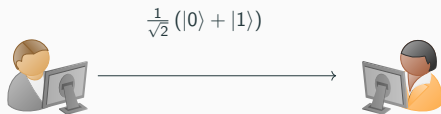


Classical Vs Quantum Encoding.

Classical:

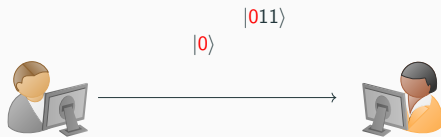


Quantum:

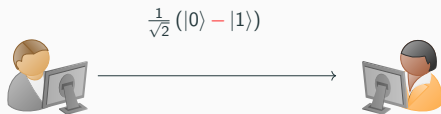


Classical Vs Quantum Encoding.

Classical:

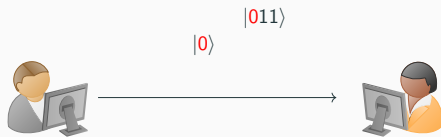


Quantum:

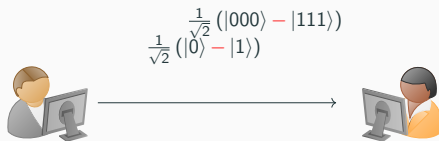


Classical Vs Quantum Encoding.

Classical:



Quantum:



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.

