

Quantum Crypto

MTAT.07.024

Team:

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✨Shahla Novruzova, Quantum Software Developer✨ ...more



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Shahla Novruzova
Quantum Software Developer

"I develop and improve techniques through advanced simulations that enable quantum computers to correct errors and operate reliably."



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What we'll cover

Fill in math background:

- Review of the basics of basic quantum information theory
 - ➔ take FunQ as starting point
- Quantum crypto / communication
 - ➔ up to QKD (BB84)
- Shor's algorithm
 - ➔ Quantum Fourier transform
- Start from what's covered in FunQ
- More about Hilbert space operators
- More about spectral theory
- Finite Fourier transform

1.

Quantum mechanics for
quantum information
processing (today).

2.

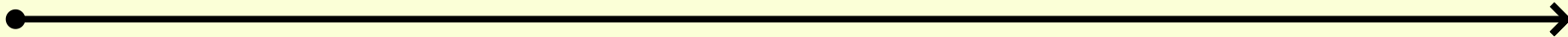
Quantum circuit model
of quantum information
processing.

3.

QKD.

4.

Shor's algorithm.



A.

Hilbert-space operators.

B.

Spectral theory.

Γ.

Finite Fourier
transform.

Course Organization

- Seven homework assignments:
 - Feb25, Mar11, Mar25, Apr8, Apr22, May6, May20
 - One week to solve.
 - No HW cheating/copying 🙅 "NaN"
 - No HW team work 🙅 "NaN"
- Course grade = average of HW marks
 - Average containing NaN = NaN = F
- Course communication: GitHub
 - `github.com/dojt/Q-crypto-2025`
 - **Send your GitHub usernames to:**
`shahla.novruzova@ut.ee`
 - Slides + HW will be made available there

Q-crypto-2025 Private

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README.md	Initial	29 minutes ago
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README

Q-crypto-2025

Materials for MTAT.07.024 Quantum Crypto course, Spring 2025.

Everything in this repository is (c) University of Tartu, Estonia.

Please consider this repository *read only*

About

MTAT.07.024 Quantum Crypto 2025

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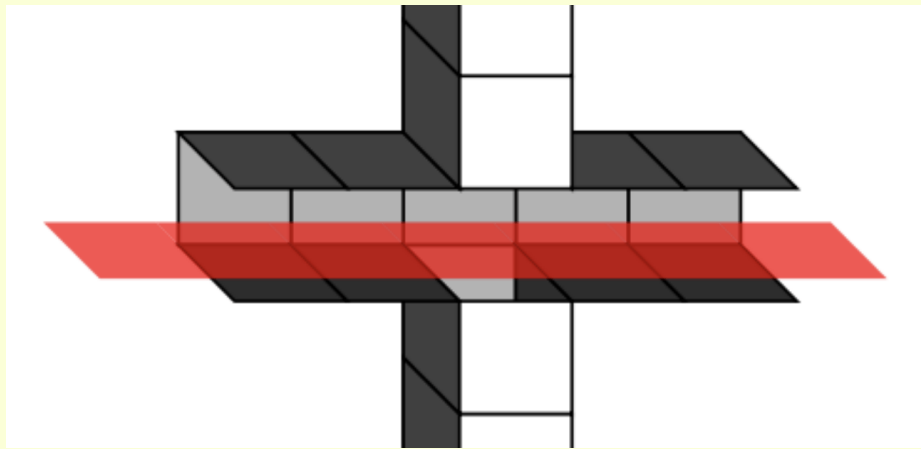
Discussions

1

Welcome to Q-crypto-2025 Discussions!

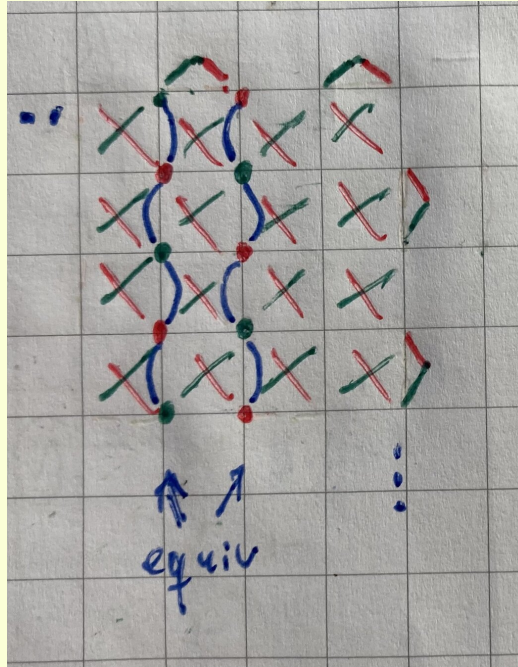
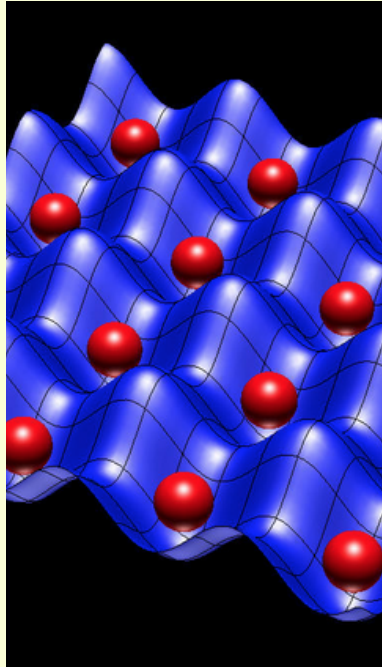
dojt announced 3 minutes ago in Announcements

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Rooms...?

- Mon 12:15-13:45 1022
- Tue 10:15-11:45 2045



Questions?

- Are AI assistants allowed in the HW?

Answer: Individual HW problems will be tagged.

- ...