

COURSE DETAIL

QUANTUM INFORMATION THEORY

Country

Denmark

Host Institution

University of Copenhagen

Program(s)

University of Copenhagen

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Physics Mathematics Computer Science

UCEAP Course Number

132

UCEAP Course Suffix**UCEAP Official Title**

QUANTUM INFORMATION THEORY

UCEAP Transcript Title

QUANTUM INFO THEORY

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

This course introduces the mathematical formalism of quantum information theory. Topics include a review of probability theory and classical information theory (random variables, Shannon entropy, coding); formalism of quantum information theory (quantum states, density matrices, quantum channels, measurement); quantum versus classical correlations (entanglement, Bell inequalities, Tsirelson's bound); basic tools (distance measures, fidelity, quantum entropy); basic results (quantum teleportation, quantum error correction, Schumacher data compression); and quantum resource theory (quantum coding theory, entanglement theory, application: quantum cryptography).

Language(s) of Instruction

English

Host Institution Course Number

NMAK14020U

Host Institution Course Title

QUANTUM INFORMATION THEORY

Host Institution Course Details

<https://kurser.ku.dk/course/nmak14020u/2022-2023>

Host Institution Campus

Host Institution Faculty

Science

Host Institution Degree

Master

Host Institution Department

Mathematical Sciences

Course Last Reviewed

2022-2023

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