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 Campus

Host Institution Faculty
Science

Host Institution Degree
Master

Host Institution Department
Mathematical Sciences

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