The course will provide an introduction to the field of Quantum Communication, with an emphasis on Quantum Cryptography. It will start from basic Quantum Information concepts and results. After introducing the No-Cloning Theorem, several Quantum Key Distribution protocols are presented, together with a discussion on security proofs. Finally, we discuss how the noise and errors in realistic quantum channels can be solved in order to establish long-distance quantum communication.

At the end of the course, there will be a lab tour with Prof. Pérez-Torres.
32068 - QC - Quantum Communication

Content

- Basic Elements of Quantum Information Theory

  Degree competences to which the content contributes:

- Basic Protocols of Quantum Information Theory

  Degree competences to which the content contributes:

- Quantum Cryptography

  Degree competences to which the content contributes:

- Long-Distance Quantum Communication

  Degree competences to which the content contributes:

Qualification system

Attendance to be evaluated: > 80 % of the lecture time

- Written exam with short questions at the end.
- Individual presentation of a Quantum Communication topic developed by the student (optional)

Regulations for carrying out activities

The usual in University teaching

Bibliography

Basic:


