PROGRAM

Quantum Club
UNIGE

Spring
2026

Advanced seminars

Stückelberg auditorium
18h

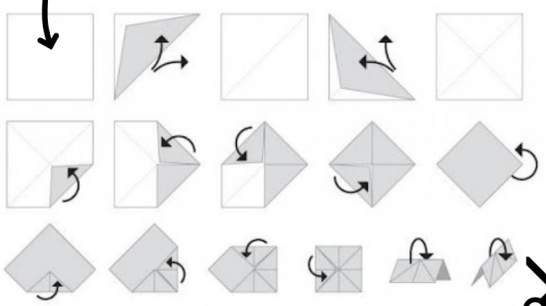
17.03.2026
Prof. Ajit Srivastava

31.03.2026
Prof. Jean-Pierre Wolf

04.05.2026
Prof. Daniel Esteve

Fold from the blank side first

Tutorial



Quantum Club
Université de Genève

A police officer stops Heisenberg on the highway and asks him, "Do you know how fast you were going?" He replies:

A No, but I know exactly where I am!
B About 3×10^8 m/s.
C It's relative, officer.

A "No, but I know exactly where I am!" This is the uncertainty principle: at quantum scale, the more precisely we know the position of a particle, the less we can know its momentum (and therefore its speed), and vice versa.

$$\Delta x \, \Delta p \geq \frac{\hbar}{2}$$

What do you call two particles that interact instantaneously, even when separated by light-years?

A Soulmates
B Entangled
C Connected by TPGs

B Entangled. Einstein called this "spooky action at a distance" because it seemed to violate relativity (nothing travels faster than light). However, Aspect's experiment (Nobel Prize 2022) proved him wrong on this point!

According to Schrödinger, until the box is opened, his cat is:

A Dead
B Alive
C Both (and probably very angry)

C A superposition of states. In reality, Schrödinger imagined this absurd scenario to demonstrate the limitations of the Copenhagen interpretation. He never tortured a real cat!

If you remove all matter and energy from a space, what remains?

A Absolutely nothing, oblivion
B Quantum fluctuations
C The dust you forgot to sweep up

B Quantum fluctuations. The "quantum vacuum" is a bubbling soup where pairs of particles and antiparticles constantly appear and annihilate each other. The vacuum even has energy!

If you drive straight into a wall, there's a tiny but non-zero probability that you'll go right through it. This is:

A The Tunnel Effect
B The "Harry Potter" Effect
C A guaranteed concussion

A The Tunnel Effect. At our (macroscopic) scale, the probability is almost zero (so answer C in practice). But it is thanks to this effect that the Sun shines (nuclear fusion) and that your USB drives work!

What exactly is light?

A A wave (like sound)
B Particles (photons)
C Both my captain !

C Both (Wave-particle duality). In Young's double-slit experiment, light behaves like a wave, creating interferences. But a detector installed to see which slit the photons pass through, will see light as particles.

Quantum teleportation allows you to teleport:

A Matter (Mr. Spock)
B Information (the quantum state)
C A pizza (unfortunately not)

B Information. The particle itself is not moved; its "state" is transferred to another, distant particle. The original particle loses its state during the process (no-cloning theorem).

What famous quote did Einstein utter to express his disagreement with the probabilistic nature of quantum mechanics?

A "$E = mc^2$... I think."
B "God does not play dice."
C "To infinity and beyond!"

B "God does not play dice." Niels Bohr reportedly replied, "Albert, stop telling God what to do!" History has proven Bohr right: chance is intrinsic to the quantum nature of things.