

# Quantum computing and its applications

*Thursday 23 January 2025 14:45 (45 minutes)*

This training consists of two parts.

First, I will briefly present my career path, starting with my work on particle detectors, moving through financial risk management, and culminating in quantum computing at IBM.

Second, we will explore how a quantum computer processes information using the laws of quantum mechanics. I will review the concepts of superposition, entanglement, and interference. Additionally, I will introduce the quantum circuit as a model for quantum computation. We will also discuss various applications of quantum computing and their potential relevance to particle detectors. Finally, we will learn how to execute quantum applications using the Qiskit quantum information software kit on the quantum processing units provided by IBM Quantum.

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Minutes and additional material for tutorial: <https://indico.cern.ch/event/1441944/timetable/?note=313163&view=standard#7-quantum-computing-and-its-ap>

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