Centre DE Nanosciences & DE Nanotechnologies

C2N General Seminar

Friday January 31th 2020- 10h 00

Amphitheater of C2N

"The emergence of quantum computing: principles, implementations, challenges"

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In this presentation, I will give a general introduction to the field of quantum computing.

Quantum computing emerges from the idea that one could exploit the most subtle concepts of quantum mechanics, such as quantum superposition and entanglement, to provide an extraordinary speed-up of computational power.

Recently, these concepts have started to emerge in the laboratories, with the first quantum computing machines being developed using various platforms: superconducting quantum bits, trapped ions, photons, Rydberg atoms, etc.

I will explain the basic working principles of a quantum computer, its figures of merits, and the main scientific and technological challenges that the various approaches are facing to develop a scalable technology.

Pascale Senellart is a senior CNRS researcher at Center for Nanoscience and Nanotechnology. Her team develops building blocks for the optical quantum computer based on semiconductor devices. She is co-founder of the start-up company Quandela. Within University Paris Saclay, she is in charge of coordinating Quantum Sciences and Technologies.
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