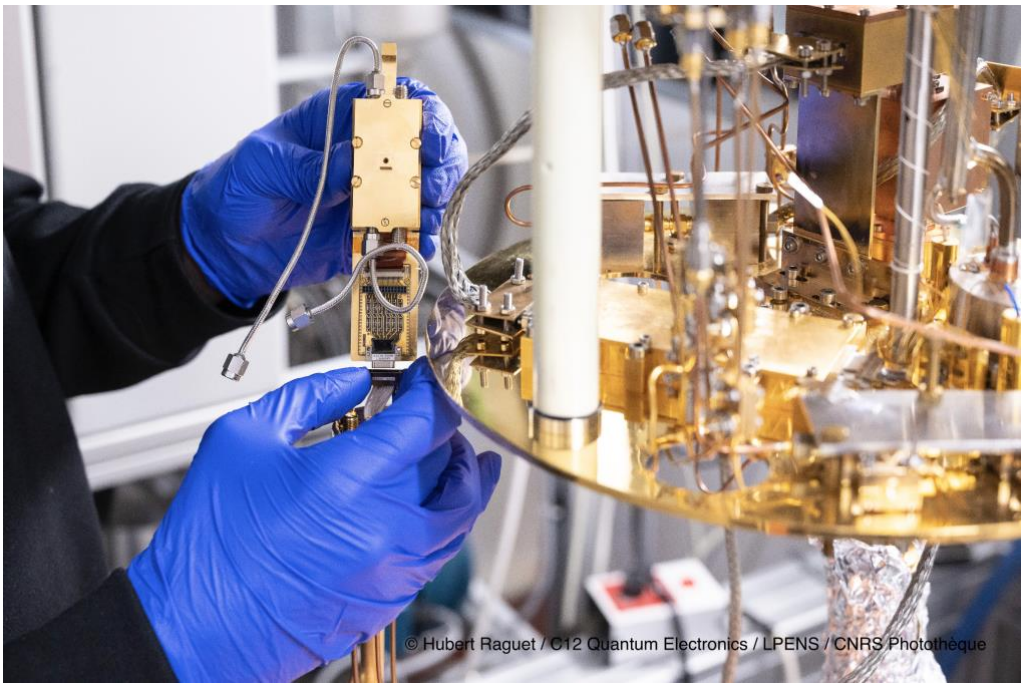
C12 Quantum Electronics, a deeptech startup developing quantum computers is looking for a …

Quantum computing software stack developer

Permanent contract – January 2022 - Paris



C12 Quantum Electronics develops reliable & application-specific quantum computers, to solve highly complex computing tasks, currently out of reach of even most powerful supercomputers.

Building a quantum computer still needs **innovators** ready to tackle exciting challenges. C12 founders are convinced that only **a new material** for the qubit will bring a technological breakthrough.

C12 Quantum Electronics uniquely uses **carbon nanotubes** as the fundamental building blocks of its quantum processor. This **high-purity material minimizes errors**, radically improves performance and reduces hardware overhead for fault-tolerant computing. Combined with well-established semiconductor techniques, **carbon nanotubes will help scale quantum computing, just as silicon revolutionized classical computing.**

Founded in 2020, C12 Quantum Electronics is a fast-growing start-up, having raised a seed round of USD 10 million in June 2021 and building its **own lab space** in the center of Paris.

Your role in C12 Quantum Electronics

You will lead the design, implementation, and management of the "**operating system**" of our quantum processor. Running on main CPUs, the operating system controls and monitors a set of hardware devices connected together in a local network architecture. The software manages (i) drivers which communicate in real time with multiple instruments (ii) automated routines, potentially with machine learning, (iii) the execution of external jobs and (iv) the user interface

- Analyzing needs in terms of I/O & automation management and translating them into software requirements
- Designing the real-time supervision software (architecture, specifications and requirements)
- Managing and supervising code developments, tests, implementation and servicing.
- Writing software documentation

You will work in close collaboration with quantum physicists. You don't need to be an expert on quantum computation, but what you need is curiosity and willingness to learn new things and technologies.

There are no set ways of how the operating system of a quantum computer should work, there is a lot to figure out. You will have a big impact on our products and the standards of the whole industry.

About you

- Minimum **5+ years** of experience in software development
- Strong coding skills in **Python / C++/ Rust** : whatever your language of choice, your projects have high code quality
- Experience in software architecture designed with scalability and in control tests
- Experience with hardware automation is seen as an advantage
- Good communication in English (verbal and written)
- Demonstrated leadership skills are seen as an advantage
- Having built new services from scratch and not being afraid of diving into the legacy codebase are seen as an advantage

You should join us if

- You want to contribute to achieve **landmark results in quantum computing**, making a difference in the emerging quantum technologies
- You want to work within an **18-people team** with various backgrounds in **nano-fabrication, quantum electronics and carbon nanotube science** to materialize our vision of a revolutionary quantum computing processor
- You want to thrive in a exceptional scientific environment with several **industrial and academic partners**
- You relate to our values (excellence, scientific integrity, diversity, curiosity and care) and want to help us define our product-focus **culture and ambition to accelerate**

C12 Quantum Electronics' unique technology

At C12 Quantum Electronics, a qubit, the fundamental functional unit of a quantum computer, is built from an isotopically ultra-pure 12C nanotube suspended above a silicon chip containing control electrodes and a quantum communication bus. Our spin qubits hold great promises in terms of individual control and manipulation as well as for the circuit architecture. A suspended isotopically pure 12C nanotube holds great promises in terms of stability, as it reduces all sources of decoherence (charge noise, nuclear spin noise, phonon relaxation).

C12 Quantum Electronics encourages all who feel qualified to apply. Recruitment decisions are based solely on qualifications, skills, knowledge and experience. Applications from women are particularly welcomed.

Join the quantum race and contact: careers@c12qe.com

C12 Quantum Electronics - Connecting quantum power to reality