

ERC-funded postdoctoral position (2 years): Photonic circuits for the control of integrated antenna arrays

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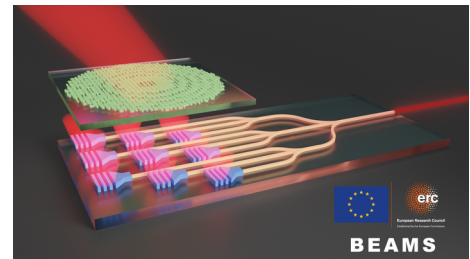
The research center and the lab

The **Center for Nanoscience and Nanotechnology (C2N)** is a joint research center between CNRS and Université Paris-Saclay located in Palaiseau, near Paris. It performs world-class research in the domains of photonics, materials, nanoelectronics, microsystems, and nanofluidics. C2N relies on a staff of almost 400 people and hosts one of the largest research nanofabrication facilities in France, with a cleanroom of 2900 m².

Within C2N, the **Silicon Photonics group** (<https://minaphot.c2n.universite-paris-saclay.fr/en/>) has a vast expertise on passive and active photonic devices, especially on silicon, silicon nitride, and germanium platforms. The group is at the forefront of photonics research, with several pioneering demonstrations of optoelectronic devices including optical modulator, photodetectors, passive devices, subwavelength metamaterials, and metasurfaces. The group has access to several optical set-ups for the active and passive characterization of photonic devices from 600 nm to 16µm wavelength.

Activities and responsibilities

We are seeking a **postdoctoral researcher** with interest and experience in **integrated and nano- photonics** to join the Silicon Photonics team at C2N. The activities will be carried out in the framework of the **ERC-funded project BEAMS**. The project aims at developing fully integrated photonic systems for the generation, control, and reception of free-space laser beams. Optical communications and LiDAR are the main application targets



The successful candidate will contribute to the project being responsible for the **development of photonic circuits and their control algorithms based on machine learning** for the active tuning of large arrays of integrated optical antennas. **Design and layout** of the circuits will be integral parts of the activities as well as the **development of the control strategies** and the **characterization** of the devices realized in the C2N cleanroom. Activities will be carried out in collaboration with the PI, the PhD students already working on the project, and the engineers at C2N. The **network of national and international collaborators** of the group built around this topic will provide a further source of support and contacts.

Job offer and candidate profile

This job position offers the possibility to work within an **enthusiastic and international-friendly team** in the outstanding environment of C2N and covered by a long-term European grant (ERC). The initial contract will be for 2 years with extension possibilities. **Gross monthly salary** will be between 3400€ and 4200€, depending on the experience. We offer access to state-of-the-art fabrication and characterization infrastructures, with the **possibility to propose and investigate novel research ideas**.

The candidate should have a PhD degree in Electrical Engineering, Applied Physics or related disciplines. The candidate should be familiar with modelling, simulation, and design of photonic components and circuits and have experience with their experimental characterization. Experience with nanofabrication processes and machine learning is appreciated. A proactive attitude and the ability to work in a diverse, multi-disciplinary, and international team with PhD, Postdocs, and students are a must.

[1] S. Khajavi et al., 'Highly efficient ultra-broad beam silicon nanophotonic antenna based on near-field phase engineering', *Sci Rep*, vol. 12, no. 1, Art. no. 1, Nov. 2022, doi: [10.1038/s41598-022-23460-x](https://doi.org/10.1038/s41598-022-23460-x).

[2] F. Ashtiani and F. Aflatouni, ' $N \times N$ optical phased array with $2N$ phase shifters', *Opt. Express*, vol. 27, no. 19, p. 27183, Sep. 2019, doi: [10.1364/OE.27.027183](https://doi.org/10.1364/OE.27.027183).