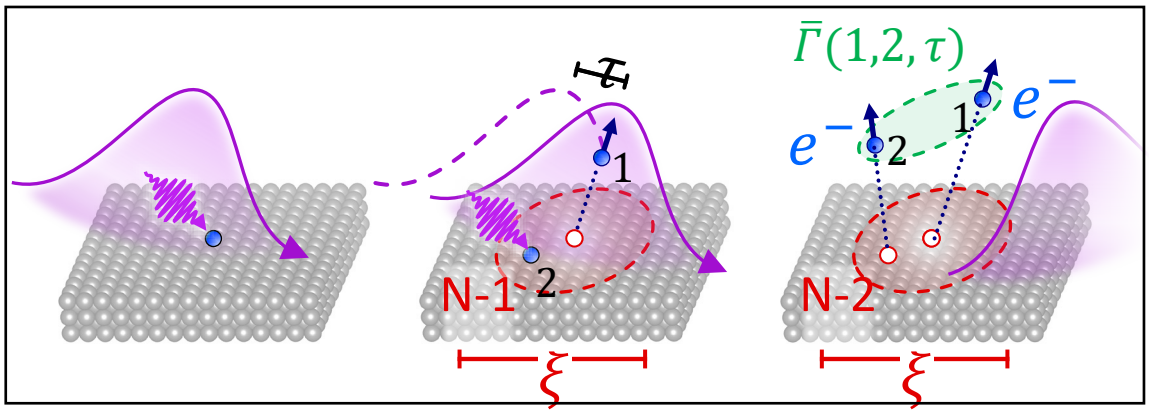
INRS UNIVERSITÉ DE RECHERCHE CENTRE ÉNERGIE MATÉRIAUX TÉLÉCOMMUNICATIONS

ALLS Advanced Laser Light Source

Postdoctoral Fellow at the ALLS ARPES laboratory (Montreal, Canada)

Led by Prof. Fabio Boschini, the time-resolved ARPES (TR-ARPES) laboratory at the Advanced Laser Light Source (ALLS) user facility at INRS-EMT is a state-of-the-art system for investigating dynamical electron interactions in a wide variety of quantum materials upon intense long-wavelength light excitation.

Prof. Boschini's group recently received support from the Gordon and Betty Moore Foundation (EPiQS Flexible Funds) for the development of a novel ARPES-based technique, noise-correlation ARPES (NC-ARPES). NC-ARPES relies on the coincident detection of two electrons emitted by two photons of the same ultraviolet probe pulse and promises direct access to the two-particle correlation function with momentum resolution (see figure below).



The design, commissioning and operation of the new NC-ARPES system will take place at the ALLS user facility at the Institut national de la recherche scientifique (INRS), EMT centre, in close collaboration with Prof. da Silva Neto (Yale) and Prof. Kemper (NCSU).

The role:

A successful candidate is an individual with a background in one or more of the following areas: experimental condensed matter physics, angle-resolved photoemission spectroscopy, vacuum and electron detection technologies, and time-resolved spectroscopies. Under the supervision of Prof. Boschini and ALLS research associates, the successful candidate will mainly lead the development of the new proposed NC-ARPES technique and will also have the opportunity to propose new and independent investigations with the state-of-the-art TR-ARPES machine at ALLS.

Responsibilities include (but not limited to):

- Lead the development of the NC-ARPES technique (hardware, post-processing algorithm, theory, data interpretation)
- Propose and perform new TR-ARPES studies of quantum materials
- Mentoring graduate and undergraduate students of the ARPES laboratory

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- Actively participating in the preparation of manuscripts for publication, as well as of presentations at scientific conferences
- Assisting in the organization of ALLS collaborative activities

The initial appointment will be for two years, with the possibility of renewal for a third year, contingent on performance. Depending on the immigration process, the anticipated start date falls between March 2025 and June 2025.

Qualifications:

Education – Ph.D. in relevant field

A background in one or more of the following areas: experimental condensed matter physics, angle-resolved photoemission spectroscopy, vacuum and electron detection technologies, and time-resolved spectroscopies.

Location:

The ALLS user facility is located at the Institut national de la recherche scientifique, EMT centre (1650, boul. Lionel-Boulet, Varennes, Quebec, Canada), about 20 km off Montreal. It is accessible from the Longueuil Terminus/Metro station via a 20-minute bus ride. Occasional home office days can be accommodated.

How to apply:

REQUIRED MATERIAL

- Proof of Ph.D. degree or an official statement from the university confirming that it will be obtained within one year from the date of application
- Curriculum vitae with publication list
- 1-page cover letter
- Research statement of not more than 3 pages (including references) describing past/current results, as well as possible future research projects using NC-ARPES and TR-ARPES.
- Contact information of two (2) references

All the required materials should be combined in a **single PDF**, and submitted to **both** Prof. Boschini (fabio.boschini@inrs.ca) and Dr. Gauthier (nicolas.gauthier@inrs.ca).

DEADLINE

Applications will be reviewed on a rolling basis beginning December 2nd, 2024, until the position is filled.

Shortlisted candidates will be invited to a 20-minute screening interview. Successful candidates will be asked to prepare a 30-40 minute presentation of a current or past project for the final interview.

Equity Statement:

INRS fosters a healthy learning and research environment where individual differences are recognized and respected. All qualified individuals are invited to apply, especially members of groups under-represented in the STEM fields such as women, visible minorities, indigenous people, members of the LGBTQ2+ communities and people with disabilities.