Job vacancy #2023-06432

Post-Doctoral Research Visit F/M Postdoctoral position in Quantum Information Theory

Contract type: Fixed-term contract
Renewable contract: Yes
Level of qualifications required: PhD or equivalent
Function: Post-Doctoral Research Visit

About the research centre or Inria department

The Inria Saclay-Île-de-France Research Centre was established in 2008. It has developed as part of the Saclay site in partnership with Paris-Saclay University and with the Institut Polytechnique de Paris.
The centre has 39 project teams, 27 of which operate jointly with Paris-Saclay University and the Institut Polytechnique de Paris; its activities occupy over 600 people, scientists and research and innovation support staff, including 44 different nationalities.

Assignment

The research project will explore the limits of quantum distributed computing based on the concept of quantum nonlocality and quantum networks. A non-exhaustive list of potential projects is:

- Find bounds on quantum abilities at distributed tasks based on
  - the concept of No-Signaling (see arXiv:0903.113), or
  - the quantum NPA (see arXiv:0803.4290) and Inflation-NPA hierarchies (see arXiv:1909.10519)
- Find ‘interesting’ distributed tasks with a quantum advantage (see arXiv:1810.10838 for a ‘not so interesting’ task)
- Generalize the concept of ‘Genuine Multipartite Nonlocality’ introduced in arXiv:2105.09381
- Develop the applications of network nonlocality, both for understanding the foundations of quantum information theory (see arXiv:2101.10873) and its applications (see arXiv:2201.05032)

Any other suggested research project in quantum information theory can be discussed (both from the physics or the computer science viewpoint).

Main activities

The project will be achieved by collaborating with Marc-Olivier Renou and other members of the group, as well as Jukka Suomela (Aalto University, Finland). Long research stays in Aalto University will be encouraged.

Skills

The applicant should hold a PhD degree in computer science, physics, mathematics, or a related field and have an excellent track record of publications in quantum information theory. Familiarity with Bell nonlocality, synchronous distributed computing and / or semidefinite programming is a plus.

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage
Remuneration
According to the candidate profil

General Information
- **Town/city**: Palaiseau
- **Inria Center**: Centre Inria de Saclay
- **Starting date**: 2024-02-01
- **Duration of contract**: 2 years
- **Deadline to apply**: 2023-12-01

Contacts
- **Inria Team**: AT-SAC AE
- **Recruiter**:
  Renou Marc-olivier / marc-olivier.renou@inria.fr

About Inria
Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

Warning: you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply
Ce poste est susceptible d’être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L’autorisation d’accès à une zone est délivrée par le chef d’établissement, après avis ministériel favorable, tel que défini dans l’arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l’annulation du recrutement.

Politique de recrutement :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.

Defence Security :
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :
As part of its diversity policy, all Inria positions are accessible to people with disabilities.