



Offer #2024-07900

PhD Position F/M A Logical and Categorical Analysis of the Heisenberg-Schrödinger duality

Contract type : Fixed-term contract

Level of qualifications required : Graduate degree or equivalent

Fonction : PhD Position

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 [40 project teams](#), 32 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.

Context

This Ph.D is funded on an ANR funding in the context of Plan Quantique.

The PhD candidate will join the QuaCS team in the laboratory LMF on Plateau de Saclay. T

he Ph.D advisors are Benoit Valiron and Vladimir Zamdzhiev.

Assignment

The main goals of this PhD project consists in interpreting the Heisenberg-Schrödinger duality in a computational and/or logical context. A plan for the thesis can therefore be devised as follows: (1) to study relevant categories of operator spaces and show that such categories are models of (fragments of) linear logic; (2) to design type systems (or, equivalently, logics) where the linear negation of linear logic can be understood in terms of the Heisenberg-Schrödinger duality; (3) to derive a computational interpretation from these ideas.

Main activities

Main activities :

- Perform bibliographic analysis
- State and prove theoretical results
- Publish and Communicates results

Additional activities :

- Participate in team's and lab's seminars
- Travel to Summer Schools and other scientific events to gain scholar maturity

Skills

Technical skills and level required : Master level in theoretical computer science, with good communication and writing skills.

Languages : French or English

Relational skills : We expect the candidate to participate in the life of the team and of the lab in general.

Other values appreciated : The candidate should abide by the standard of open science.

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 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

1st and 2nd year : 2082€ gross/month

General Information

- **Theme/Domain** : Proofs and Verification
Software engineering (BAP E)
- **Town/city** : Gif Sur Yvette
- **Inria Center** : [Centre Inria de Saclay](#)
- **Starting date** : 2024-09-01
- **Duration of contract** : 3 years
- **Deadline to apply** : 2024-07-26

Contacts

- **Inria Team** : [QUACS](#)
- **PhD Supervisor** :
Valiron Benoît / benoit.valiron@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

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.