



**Offer #2025-09034**

## **Post-Doctoral Research Visit F/M Reasoning up to inclusion and isomorphism in type theory**

**Contract type :** Fixed-term contract

**Renewable contract :** Yes

**Level of qualifications required :** PhD or equivalent

**Fonction :** Post-Doctoral Research Visit

**Level of experience :** Recently graduated

### **Context**

The job is within the framework of the Malinca project (<http://malinca.org>). It will be located at the IRIF lab in Paris.

Travel expenses are covered within the limits of the scale in force.

### **Assignment**

It is common in informal mathematical proofs to reason up to implicit inclusion or isomorphism of structure. The objective of the post-doc is to study such inclusions or isomorphisms in the formal context of type theory, with application to proof assistants. This includes questions such as:

- robustness of type-theoretic constructions up to universe cumulativity or subtyping (e.g. what definitional equalities should satisfy type-theoretic constructions so that an implicit inclusion can be equivalently interpreted as an explicit one)
- robustness of type-theoretic constructions up to isomorphism (e.g. how to ensure that a recursive definition of lists of some length transparently behaves the same when replaced by an equivalent indexed inductive definition)
- interaction between eta-rules and reasoning up to inclusion
- type inference in the presence of inclusions or isomorphisms

### **Skills**

Strong expertise expected in type theory, in type-theory-based proof assistants, in the formalization of type theory, in elaboration techniques for proof assistants.

Fluency in French or English recommended.

## 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

## General Information

- **Theme/Domain** : Proofs and Verification  
Software Experimental platforms (BAP E)
- **Town/city** : Paris
- **Inria Center** : [Centre Inria de Paris](#)
- **Starting date** : 2025-09-01
- **Duration of contract** : 12 months
- **Deadline to apply** : 2025-08-19

## Contacts

- **Inria Team** : [PICUBE](#)
- **Recruiter** :  
Herbelin Hugo / [Hugo.Herbelin@inria.fr](mailto:Hugo.Herbelin@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.