Research

IRIF is renowned for its contributions to the design and analysis of algorithms, the study of computational and data representation models, the foundations of programming languages, software development, verification, and certification. IRIF also conducts interdisciplinary research taking advantage of its scientific approach.

IRIF relies on mathematical concepts developed and studied within it, particularly in combinatorics, graph theory, logic and algebra. Its work also contributes directly to mathematics, including number theory, combinatorial physics, probability theory, category, proof theory, and computer assisted mathematical proofs.

Academics

IRIF participates to several master programs in computer science and mathematics such as:

- Parisian Master of Research in Computer Science, coordinated by Université Paris Cité in partnership with most of regional academic institutions. IRIF manages a dozen of courses and is associated to about twenty others.
- Logique Mathématique et Fondements de l’Informatique, co-led by IRIF and Institut de Mathématiques de Jussieu-Paris Rive Gauche.

IRIF has started and been running the French Spring Research School in Theoretical Computer Science since 1973, and also organizes three research schools per year.

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Tramway T3a: Avenue de France
Buses 62, 89: Porte de France

The research conducted at IRIF is based on the study and understanding of the foundations of all computer science, in order to provide innovative solutions to the current and future challenges of digital sciences.

IRIF is a research unit co-founded by CNRS and Université Paris Cité, hosting one Inria project-team. IRIF is also member of Fondation Sciences Mathématiques de Paris, and of three regional programs: Math Innov, Computer Sciences, Quantum Technologies.
**Numbers**

- 182 members / 90 tenures / 48 PhD students
  - 50 faculty members
  - 32 researchers
  - 6 administrative staff, 4 technical staff
  - 7 research associates, 9 emeritus members
  - 15 postdocs and teaching assistants
  - 60 PhD students

- Annual budget of 3 M€ funding 41 projects:
  - 2 ERC, 3 H2020, 1 Marie Curie
  - 22 ANR, 3 IUF
  - 6 CNRS, 2 UP, 3 CIFRE

- 250 international publications per year

**Organization**

- 9 thematic research groups organized in 3 poles:
  - **Algorithms and discrete structures**
    - Algorithms and complexity
    - Combinatorics
    - Distributed computing
    - Theory and algorithmics of graphs
  - **Automata, structures and verification**
    - Automata and applications
    - Modeling and verification
  - **Proofs, programs and systems**
    - Algebra and computation
    - Analysis and conception of systems
    - Proofs and programs

**National**

- Leading member of networks:
  - Multifractal analysis and self-similarity
  - Mathematical computer science
  - Quantum engineering

**International**

- 3 research laboratories: Israel, Japan and Singapore
- 1 research project: Argentina
- 2 research networks: Italy and Germany–Austria–United Kingdom–Sweden
- 1 emerging action: China

**Transfert**

- Partner of several companies including:
  - AdaCore
  - Atos
  - IDQuantique
  - Microsoft
  - Mitsubishi
  - Nokia
  - Oracle Labs
  - QCWare
  - Total

**Software**

- Development of many major software including:
  - Babel
  - CDuce
  - Coq
  - C-SHORE
  - CUDF
  - Kappa
  - Ocsigen
  - Stamina
  - Vaucanson