



Offer #2024-07782

PhD Position F/M Construction de préconditionneurs efficaces pour des problèmes d'imagerie ultrasonore

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

Ce projet de thèse se situe à l'interface de plusieurs domaines des mathématiques appliquées : étude des équations aux dérivées partielles à coefficients stochastiques, problèmes inverses, analyse et simulation numérique. L'équipe d'encadrement regroupe les compétences dans chacune des différentes composantes et s'appuie notamment sur l'expertise de Laure Giovangigli en imagerie médicale et propagation d'ondes en milieux multi-échelles et aléatoires [fliss2020time, boucartmodelisation, Garnier2023] ; combinée à celle de Frédéric Nataf et d'Emile Parolin en calcul haute performance, méthodes d'éléments finis et de décomposition de domaine [Dolean2015, Spillane2014, Bouziani2023, Daas2024, Parolin2020, Claeys2022, Claeys2022b, Nataf2024]. Les problématiques que nous souhaitons résoudre dans ce projet sont apparues lors d'une précédente thèse en imagerie ultrasonore en partenariat avec l'équipe d'Alexandre Aubry de l'Institut Langevin, et particulièrement grâce à l'étroite collaboration entre Laure Giovangigli et Pierre Millien. Enfin la thèse pourra profiter des ressources en calcul haute performance de l'équipe Inria Alpines à laquelle Emile Parolin et Frédéric Nataf appartiennent.

Main activities

L'objectif de ce projet est de construire, analyser et mettre à disposition des outils de simulation numérique pour la validation et l'amélioration de nouveaux algorithmes d'imagerie ultrasonore quantitative.

L'ambition est de produire des simulations numériques à échelle réelle des applications, s'affranchissant des limitations des capacités de calcul actuelles.

Skills

Le candidat ou la candidate devra être titulaire d'un Master 2 de mathématiques appliquées.

Des compétences en analyse des EDP et simulations numériques sont souhaitées.

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

Remuneration

Gross salary : 2.100 euros / month

General Information

- **Theme/Domain** : Numerical schemes and simulations
- **Town/city** : Palaiseau
- **Inria Center** : [Centre Inria de Saclay](#)
- **Starting date** : 2024-10-01
- **Duration of contract** : 3 years
- **Deadline to apply** : 2024-09-30

Contacts

- **Inria Team** : [POEMS](#)
- **PhD Supervisor** :
Giovangigli Laure / laure.giovangigli@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.