



Offre n°2025-08557

## Post-Doctorant F/H Engineer / Postdoctoral Researcher / Master's Graduate in Applied Mathematics

Type de contrat : CDD

Niveau de diplôme exigé : Thèse ou équivalent

Fonction : Post-Doctorant

### A propos du centre ou de la direction fonctionnelle

The Inria University of Lille centre, created in 2008, employs 360 people including 305 scientists in 15 research teams. Recognised for its strong involvement in the socio-economic development of the Hauts-De-France region, the Inria University of Lille centre pursues a close relationship with large companies and SMEs. By promoting synergies between researchers and industrialists, Inria participates in the transfer of skills and expertise in digital technologies and provides access to the best European and international research for the benefit of innovation and companies, particularly in the region. For more than 10 years, the Inria University of Lille centre has been located at the heart of Lille's university and scientific ecosystem, as well as at the heart of Frenchtech, with a technology showroom based on Avenue de Bretagne in Lille, on the EuraTechnologies site of economic excellence dedicated to information and communication technologies (ICT).

### Contexte et atouts du poste

We are seeking an engineer, a postdoctoral researcher, or a Master's graduate specializing in applied mathematics for a position focused on modeling and controlling soft robots, with an emphasis on medical applications. The role will center on enhancing advanced code dedicated to simulating the behavior of concentric tubes, particularly addressing instability issues encountered during rotational movements. The selected candidate will adapt this existing code to the SOFA master platform and develop innovative solutions to ensure the stability and efficiency of the model.

### Mission confiée

**\*\*Collaboration and Opportunities:\*\***

You will work closely with a team of researchers and engineers specializing in soft robot modeling and control. This role offers a unique opportunity to contribute to cutting-edge applied research with potential medical applications. Depending on project progress, you may also participate in the design and implementation of an operational prototype.

### Principales activités

**\*\*Key Responsibilities:\*\***

1. **\*\*Code Integration with SOFA Master:\*\***

- Adapt and integrate the current codebase into the SOFA master codebase, a recognized platform for real-time physical simulation.

2. **\*\*Investigation of Algorithmic Instabilities:\*\***

- Identify sources of algorithmic instabilities arising during rotations between concentric tubes.

- Propose and implement solutions to improve the stability and robustness of the model.

3. **\*\*Prototyping and Validation:\*\***

- As development progresses, contribute to the design of an initial functional prototype.

- Integrate and test proposed solutions to validate the effectiveness of the enhanced Cosserat model, ensuring its practical feasibility.

### Compétences

**\*\*Required Skills:\*\***

- Strong expertise in applied mathematics, especially in modeling and analyzing complex systems (e.g., Cosserat models).

- Advanced programming skills, particularly in C++ and/or Python.

- Experience with physical simulation tools (such as SOFA) is highly desirable.

- Knowledge of soft robotic systems and their medical applications is a plus.

- Problem-solving skills and the ability to propose innovative solutions to complex challenges.

**\*\*Additional Requirements for Postdoctoral Candidates:\*\***

- **\*\*Scientific Communication:\*\*** Strong ability to read and write scientific papers is essential.
- **\*\*Bridging Theory and Practice:\*\*** Translating theoretical principles into practical applications skill.
- **\*\*Interdisciplinary Problem Solving:\*\*** Robotics often requires integrating knowledge from diverse fields.

## Avantages

- 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

## Informations générales

- **Thème/Domaine :** Robotique et environnements intelligents  
Calcul Scientifique (BAP E)
- **Ville :** Villeneuve d'Ascq
- **Centre Inria :** [Centre Inria de l'Université de Lille](#)
- **Date de prise de fonction souhaitée :** 2025-04-01
- **Durée de contrat :** 1 an, 6 mois
- **Date limite pour postuler :** 2025-02-15

## Contacts

- **Équipe Inria :** [DEFROST](#)
- **Recruteur :**  
[Adagolodjo Yinoussa / yinoussa.adagolodjo@inria.fr](mailto:yinoussa.adagolodjo@inria.fr)

## A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

**Attention:** Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

## Consignes pour postuler

### Sécurité défense :

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.