UNIVERSITETET I BERGEN

University of Bergen
Department of Mathematics

Jobbnorge ID: 300823
Deadline: 14.06.2026
Website: https://www.uib.no/om/84775/ledige-stillinger-ved-uib
Scope: Fulltime
Duration: Permanent

PhD Research Fellow in mathematics focused on signatures and rough paths

UiB - Knowledge that shapes society

UiB shall be among Europe's leading universities, internationally recognized for high quality in research and education. As a societal institution, we shall contribute to sustainable and democratic development and be an attractive and inclusive place to study and work.

Video: https://youtu.be/i4SDcLir6Oc

PhD Research Fellow in mathematics focused on signatures and rough paths

There is a vacancy for a PhD Research Fellow in Mathematics at the Department of Mathematics. The position is for a fixed-term period of 3 years with the possibility of a 4th year with career-promoting work (e.g. teaching at the Department). The position financed by Tromsø Research Foundation (TFS) through the Lie Størmer Center.

In this call, we are interested in a candidate who will work in research related to the following topic of the project: Area3 - Magnus Expansions and Signatures in Data Science and Engineering focusing on signatures, in the sense of rough paths, applied to curves and surfaces. Tools to study this expansion involves the Magnus expansion, Hopf algebras and applications.

About the project/work tasks

Research at the Lie-Størmer Center (LSC) aims to explore uncharted territory at the interface of computational and pure mathematics, targeting foundational mathematical challenges relevant to the modern information society and geometric dynamical control in engineering.

Computational mathematics is a cornerstone of modern science. Its methods are reshaping the foundations of pure mathematics, while abstract mathematical concepts generate fresh insights into algorithms and discretization techniques - critical for numerical computations and simulations. This convergence signifies a pivotal phase in the mathematical sciences, where the divide between pure and applied mathematics is narrowing. Advancing this integration demands collaboration across these fields, which the Lie-Størmer Center will champion.

For the project of this PhD position, we want to look at signatures of curves, rough paths and rough differential equations and the relatively recent field of signatures of surfaces. The approach to the problem will be mostly from the point of view of analysis, but topics from algebra, in particular Lie theory will also play a central role.

Under supervision, the successful candidate should work on the following tasks:

- Consider the application of the Magnus expansion for ODEs in Lie groups to rough differential equations.
- Investigate applications of different approaches to signatures of surfaces to PDEs with expressions with low regularity.

Depending on the interest and background of the student, problems related to Riemannian geometry and/or numerical applications such as in machine learning can also be investigated.

The candidate is expected to participate in the National PhD-school “Mathesis”, run by the Lie-Størmer Center (click here for details).

Qualifications and personal qualities

- Applicants must hold a master's degree or equivalent education in mathematics. Master students can apply provided they complete their final master exam before 31.08.2026. It is a condition of employment that the master's degree has been awarded.
- A background that includes stochastic processes and/or rough path theory is an advantage.
- Knowledge of Lie theory and/or differential geometry is an advantage.
- Knowledge of numerical applications of signatures and/or Lie theory is an advantage.
- As the candidate will work as part of the larger Lie-Størmer project, they must have a positive attitude towards interacting with, and possibly doing research in, other areas related to algebra and geometry.
- Applicants must be able to work independently and in a structured manner and demonstrate good collaborative skills.
- Applicants must have strong analytical and problem-solving abilities.
- Applicants must have good written and oral English skills

In assessing the candidates, particular emphasis will be placed on academic qualifications, the candidates' fit within the overall research program, and personal motivation to proceed with a PhD on the selected project within the Lie-Størmer Center.

Special requirements for the position

The University of Bergen is subjected to the regulation for export control system. The regulation will be applied in the processing of the applications.

The following applies to the position

About the PhD Research Fellow position: The fellowship will be for a period of 3 years, with the possibility for a 4th year contingent on the qualifications of the candidate and the teaching needs of the department and will be decided by the Head of Department upon appointment. If a 4th year is granted, one year of career-promoting work associated with teaching, dissemination or research infrastructure/services, will be distributed over the full employment period and thus corresponding to 25 per cent of the time each year.

The employment period may be reduced if you have previously been employed in a qualifying post (e.g. research fellow, research assistant).

About the research training: As a PhD Research Fellow, you must participate in an approved educational programme for a PhD degree within a period of 3 years. The deadline for applying for admission to the PhD programme at The Faculty of Science and Technology is 2 months after you start your position or after the start of the research project that will lead to the PhD degree. It is a condition that you satisfy the enrolment requirements for the PhD programme at the University of Bergen

We can offer

- Exciting development opportunities as part of your role in a strong professional environment
- Salary as PhD research fellow (code 1017) in the state salary scale. This constitutes a gross annual salary of NOK 568 700. Further increases in salary are made according to length of service in the position.
- Enrolment in the Norwegian Public Service Pension Fund
- Good welfare benefits

Your application must include

- a brief account of the applicant's research interests and motivation for applying for the position
- a detailed justification of your qualifications in relation to the listed requirements, explaining how you meet each criterion. Additionally, you should address the "advantages" mentioned above, as these will be taken into account when ranking the candidates.
- the names and contact information for two referees. One of these should be the main advisor for the master's thesis or equivalent thesis
- CV
- transcripts and diplomas showing completion of the bachelor's and master's degrees. If you have not yet completed your master's degree, please submit a statement from your institution confirming the expected date of award of your master's degree. Your master's degree must be documented with transcripts and/or diploma before starting in the position.
- A copy of the Master thesis or a link to it if it is published online. If the candidate has not yet finished their thesis, a current draft needs to be provided.
- relevant certificates/references
- approved documentation of proficiency in English (if required, cf. English language requirements for PhD admission)
- a list of any works of a scientific nature (publication list with links) if relevant.

The application and appendices with certified translations into English or a Scandinavian language must be uploaded at Jobbnorge

General information

Detailed information about the position can be obtained by contacting: Professor Erlend Grong, Department of Mathematics (erlend.grong@uib.no), or Head of Department Antonella Zanna Munthe-Kaas (antonella.zanna@uib.no).
For HR related questions contact HR adviser Karoline Christiansen on karoline.christianen@uib.no or +47 55 58 47 70

Diversity is a strength that enables us to solve our tasks even better. UiB therefore needs qualified employees regardless of gender, ethnicity, religion, worldview, disability, sexual orientation, gender identity, gender expression, and age.

We encourage women to apply. If multiple applicants have approximately equivalent qualifications, the rules pertaining to moderate gender quotas shall apply.

The University of Bergen applies the principle of public access to information when recruiting staff for academic positions.

Information about applicants may be made public even if the applicant has asked not to be named on the list of persons who have applied. The applicant must be notified if the request to be omitted is not met.

The successful applicant must comply with the guidelines that apply to the position at all times.

We encourage applicants with disabilities, immigrant backgrounds, or gaps in their CV to apply. By indicating such circumstances in your application, you may receive favourable consideration. We ensure that at least one qualified applicant from each of these groups is invited for an interview as part of our commitment to inclusivity and equal opportunity. For further information about the recruitment process, click here.

Life as a PhD candidate at UiB

Marion Claireaux tells about life and work as a PhD candidate at UiB.

Video: https://www.youtube.com/watch?v=nrtp6VxMeJ4&index=2&list=PLf8ZIYfAO0qjhROTj6SthDbSScg0lSO6G

About UiB

The University of Bergen is a renowned educational and research institution, organised into seven faculties and approximately 54 institutes and academic centres. Campus is located in the centre of Bergen with university areas at Nygårdshøyden, Haukeland, Marineholmen, Møllendalsveien and Årstad.

There are seven departments and several centres at Faculty of Science and Technology. Read more about the faculty and departments.

Additional information

Contact person:

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Place of service:

Allegaten 41 5006 Bergen (Bergen Municipality)