PhD fellowship in analytical methods for partial differential equations

About the position

A PhD fellowship in analytical methods for partial differential equations, supervised by Katrin Grunert, is available at the Department of Mathematical Sciences at NTNU. The successful candidate will be offered a three-year position. The Department may offer a twelve-month extension as a teaching assistant.

Partial differential equations turn up in the description of various phenomena that can be observed in everyday life. A very fascinating phenomena in this context, which e.g. can be observed close to a shore, is wave breaking. When it takes place, a lot of energy concentrates in a single point for a moment, but some of this energy is going to disappear immediately afterwards and hence affects the future shape of the wave. A central question for such equations is stability: Which influence has a small change to the wave profile on the future shape of the wave?

The goal of this PhD project is to increase the understanding of shock formation and wave breaking as well as to trace their impact on stability results for some carefully selected nonlinear and nonlocal partial differential equations. Since both the formation of shocks and the breaking of waves are characterized by singularities turning up, solutions are non-unique. Thus, classical methods to describe solutions globally break down and have to be replaced by tailor-made solution concepts. The project will use advanced techniques based on mathematical analysis.

The work place will be Trondheim.

Duties of the position

- Research work in collaboration with the supervisors research group.
- Teaching (if the employee speaks a Scandinavian language, the position may be extended to a fourth year)
- Dissemination of results

Required selection criteria

We are looking for a highly motivated candidate with a sound background in mathematical analysis or partial differential equations and a strong interest in analytical methods for partial differential equations. Good communication and collaboration skills and an independent, self-driven working style are essential.

The PhD-position's main objective is to qualify for work in research positions. The qualification requirement is completion of a master’s degree or second degree (equivalent to 120 credits) with a strong academic background in mathematical analysis or partial differential equations, or equivalent education with a grade of B or better in terms of NTNU's grading scale. Applicants with no letter grades from previous studies must have an equally good academic foundation. Applicants who are unable to meet these criteria may be considered only if they can document that they are particularly suitable candidates for education leading to a PhD degree.

MSc students who expect to complete their master's degree studies by summer 2020 are also encouraged to apply. Employment will then be postponed until the master’s degree is finished.

The applicants who do not master a Scandinavian language must document a thorough knowledge of English (equivalent to a TOEFL-iBT score of 100 or more (earlier TOEFL score of 600 or more)).

The appointment is to be made in accordance with the regulations in force concerning State Employees and Civil Servants and national guidelines for appointment as PhD, post doctor and research assistant.

Personal characteristics

- High self-motivation
- Intrinsic curiosity and open-minded attitude
- Independent working style
- Very good communication and collaboration skills

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability, as well as motivation, in terms of the qualification requirements specified in the advertisement.

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and inclusive work environment with dedicated colleagues
- favourable terms in the Norwegian Public Service Pension Fund
Salary and conditions

PhD candidates are remunerated in code 1017 and are normally remunerated at gross from NOK 479,600 per annum before tax. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years with no teaching, but the Department may offer a 4th year with teaching and other duties for approximately 25% of the entire 4-year period.

Appointment to a PhD position requires admission to the PhD programme in mathematics (http://www.ntnu.edu/ie/research/phd) within three months of employment, and participation in an organized PhD programme during the employment period.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criteria in the latter law will be prohibited from recruitment to NTNU. After the appointment you must assume that there may be changes in the area of work.

It is a prerequisite you can be present at and accessible to the institution on a daily basis.

About the application

The application and supporting documentation to be used as a basis for the assessment must be in English or Norwegian.

The application must include the following:

- CV including Information about educational background and work experience.
- A short research statement explaining the experience and the interest of the candidate for the research topic and describing the relevance of the candidate’s background to the research project (maximum 1 page)
- A copy of the master thesis. For those who are near to completion of their MSc: An extended abstract combined with a statement of how and when the applicant plans to complete the thesis.
- Any relevant publications. Joint work will only be considered provided that a short summary outlining the applicant's contributions is attached.
- Certified copies of relevant transcripts and diplomas. Candidates from universities outside Norway are kindly requested to send a Diploma Supplement or similar documentation, which describes in detail the programme of study, the grading system, and the rights to further studies associated with the degree obtained.
- Contact information for at least two references.
- Documentation of fluency in the English language.
- Other documents, which the applicant may find relevant may also be included.

General information

Working at NTNU

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA.

As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

Information Act (Offentleglova), your name, age, position and municipality may be made public even if you have requested not to have your name entered on the list of applicants.

The national labour force must reflect the composition of the population to the greatest possible extent, NTNU wants to increase the proportion of women in its scientific posts. Women are encouraged to apply.

Applicants who have been short-listed will be invited for interviews.

If you have any questions about the position, please contact Professor Katrin Grunert, e-mail katrin.grunert@ntnu.no .

Diploma Supplement is required to attach for European Master Diplomas outside Norway. Chinese applicants are required to provide confirmation of Master Diploma from China Credentials Verification (CHSI).

Please submit your application electronically via jobbnorge.no. Preferably, the attachments should be submitted as a single file. Please refer to the application number 2020/12812 when applying. Applications submitted elsewhere will not be considered. If you are invited for an interview you must provide certified copies of transcripts.

Application deadline: 31.05.2020.

NTNU - knowledge for a better world
The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of Mathematical Sciences

We are Norway’s largest university environment in mathematical sciences. The Department has a particular responsibility for all basis education in mathematical sciences for engineering and natural science students at NTNU. We focus on long-term basic research and applied research at a high international level.

Our aim is to meet the society’s needs for mathematical and statistical expertise in business and public administration as well as in the research and education sector. The Department of Mathematical Sciences is one of seven departments in the Faculty of Information Technology and Electrical Engineering.