Faculty of Science and Engineering (FSE)

Johann Bernoulli Institute for Mathematics and Computer Science (JBI)

Profile Report **Mathematical Physics**
Mathematische Fysica

Discipline: Mathematics
Level: Tenure Track Assistant Professor
Fte: full time (1.0 fte)

1. Scientific discipline

This profile report concerns a Tenure Track Assistant Professor position in Mathematical Physics at the Johann Bernoulli Institute .

2. Vacancy

This position is opened by the Board of the Faculty (FB ref: EMK/gl/17/00088) and will be embedded in the research group (basic unit) Dynamical Systems, Geometry & Mathematical Physics of the Johann Bernoulli Institute for Mathematics and Computer Science. The position falls within the framework of 'Career Paths in Science 3' ('Bèta's in Banen 3'). Please see the information at the web page criteria and conditions.

3. Selection Committee

Prof.dr. J.B.T.M. Roerdink	(scientific director of JBI, Chair)
Prof.dr. ir. R.W.C.P. Verstappen	(director of the teaching programs in Mathematics and Applied Mathematics of the FSE/RUG)
Prof. dr. M. Crainic	(ext. member, professor of Differential Geometry, Utrecht University)
Prof.dr. H. Waalkens	(professor of Mathematical Physics, RUG)
Prof.dr. G. Vegter	(group leader Dynamical Systems, Geometry & Mathematical Physics, RUG)
Prof.dr. M. Loi	(professor of Photophysics and Optoelectronics, FSE/RUG)
E. Pap	(student member, MSc Mathematics & Physics)

HR advisor:
L.A. Boomsma, (Human Resources Department, RUG)

4. Research area
The research area is Mathematical Physics, a broad field at the interface of mathematics and physics. We are particularly interested in strengthening and extending our expertise in either of the fields semiclassical quantum mechanics and/or integrable systems. Both of these fields connect to present research activities in mathematics in Groningen. Here semiclassical quantum mechanics concerns the study of quantum systems in the limit of short wavelengths whose study require techniques from semiclassical analysis (microlocal and harmonic analysis, the theory of pseudo differential and Fourier integral operators, or more broadly partial differential equations, spectral theory, symplectic geometry, and representation theory). Integrable systems refer here to finite dimensional Hamiltonian systems that are integrable in the sense of Liouville. This is a field that complements and extends local research areas on singular foliations of integrable systems and/or the classification of integrable systems.

5. Embedding: Institute and Basic Unit
The Johann Bernoulli Institute for Mathematics and Computer Science (JBI) is part of the Faculty of Science and Engineering (FSE). The profile of the institute centres around modelling and computation with a focus on science and technology, keeping a balanced mix of fundamental and applied aspects. The JBI comprises five mathematics programmes and five computer science programmes. The mathematics programmes are: "Algebra", "Dynamical Systems, Geometry & Mathematical Physics", "Statistics & Probability", "Systems, Control & Applied Analysis" and "Computational Mechanics & Numerical Mathematics". The constituting programmes participate in seven national research schools and most of the PhD students are enrolled in an educational programme and take part in other activities offered by these schools. The JBI has a leading role in the recently established cross-disciplinary research theme on Data Science and Systems Complexity (DSSC) within the Faculty of Mathematics and Natural Sciences, and participates in the recently established Research Priority Fundamentals of the Universe of the FSE.

6. Local and (inter)national position
The JBI has a strong position in national and international mathematics, as evidenced by participation in NWO and EU projects, publications in renowned journals and conferences, memberships of editorial boards and program committees, conference chairing, etc. Mathematics research in Groningen is strongly represented in Nonlinear Dynamical Systems, in Mathematical Physics and in Systems & Control. At the national level the fundamental mathematical fields participate in the research clusters "Discrete, Interactive and Algorithmic Mathematics, Algebra and Number Theory" (DIAMANT), "Geometry and Quantum Theory" (GQT), "Nonlinear Dynamics of Natural Systems" (NDNS+) and "Stochastics – Theoretical and Applied Research" (STAR) and in the national research school WONDER.

7. Expected contribution to research
The candidate is expected to carry out an internationally leading research programme in Mathematical Physics and set up his/her own research group. He/she is a strong scientist in his/her own field, as well as open to collaborations with other scientific areas. A strong involvement in the Research Priority Fundamentals of the Universe is expected.

The research should have a visibility on a worldwide level and lead to publications in top journals. The research is expected to strengthen the existing efforts within JBI, especially regarding participation in the cluster Geometry & Quantum Theory (GQT). Supervision of PhD students and postdocs and obtaining substantial external funding are an important part of the research activities.

8. Expected contribution to teaching
The candidate is expected to contribute to the teaching programmes of the bachelor and master programmes of Mathematics and Applied Mathematics in the Undergraduate and Graduate Schools of Science of the FSE. He/she will contribute both to teaching existing courses, and to the development of new courses in his/her own subdiscipline of Mathematics. This includes the supervision of bachelor and master thesis projects. The candidate will also contribute to other relevant programmes of the Faculty. During the first 6 years of the appointment the tenure-track assistant professor will devote at most 30% of the total time to educational tasks. Once tenure has been obtained, these tasks amount to 40%.

9. Expected contribution to the organization
During the first five years, the assistant professor is free from substantial administrative tasks. However, it is expected that he/she will play a role in the general organisation of the research programme, such as supervising PhD students or postdocs, running a seminar series, and contribute to the organisational tasks of the research institute JBI, the (under)graduate school, and the Faculty.

Vacancy text

Tenure Track Assistant Professor Mathematical Physics (1,0 fte)

Organisation
Since its foundation in 1614, the University of Groningen has enjoyed an international reputation as a dynamic and innovative center of higher education offering high-quality teaching and research. Balanced study and career paths in a wide variety of disciplines encourage currently more than 30,000 students and researchers to develop their own individual talents. Belonging to the best research universities in Europe, the top 100 universities in the world and joining forces with prestigious partner universities and networks, the University of Groningen is truly an international place of knowledge.

Job description
The Johann Bernoulli Institute for Mathematics and Computer Science (JBI) of the Faculty of Science and Engineering has a vacancy for a tenure track assistant professor in Mathematical Physics. JBI offers excellent opportunities for conducting research in the broad interdisciplinary area between mathematics and its applications. We seek a new faculty member with a high potential for developing an internationally recognized research line within the unit "Dynamical Systems, Geometry & Mathematical Physics". Candidates with expertise in either of the fields semiclassical quantum mechanics and/or integrable systems are particularly encouraged to apply. Both of these fields connect to present research activities in mathematics in Groningen.

Qualifications
You have:
- A Ph.D. degree in the relevant field;
- At least two years postdoctoral experience abroad (industrial experience can partly compensate this);
- Excellent research qualities in the above subject area, as evidenced by a publication record in international peer-reviewed journals and renowned conferences, and a relevant international network;
- Teaching and organizational experience appropriate to career stage;
- Evidence of successful acquisition of external funding appropriate to career stage.

You are:

- A team player with good communications skills;
- Open to collaborations with other scientific areas.
- Willing to fulfill the requirements for the University Teaching Qualification;
- Willing to learn the Dutch language.

Conditions of employment
The appointment will be initially for a maximum of 6 years at the level of tenure track assistant professor with a gross monthly salary dependent on qualifications and work experience from €3,427 up to a maximum of €5,330 (CAO-NU salary scales 11 or 12) gross per month for a full-time position. After 5 years there will be an assessment of performance based on established criteria. If the outcome of the assessment is positive, the assistant professor will be promoted to

associate professor with tenure. There will be another assessment at the end of a further 4-7 year period for the promotion to full professor.

In addition to the primary salary the University offers 8% holiday allowance and an end-of-year bonus of 8,3%.

The University of Groningen provides career services for partners of new faculty members moving to Groningen.

The University of Groningen has adopted an active policy to increase the number of female scientists across all disciplines of the university. Therefore, female candidates are especially encouraged to apply.

Applications

Interested candidates are invited to submit a complete application including:

- A letter of motivation;
- A Curriculum Vitae, including a list of publications;
- A list of five self selected 'best papers';
- A statement about teaching goals and experience and a description of scientific interest and plans;
- The names of three references complete with title and contact information.

You may apply for this position until .... via the application form (click on 'Apply' below on this advertisement on the University website).

> **Comment [JR1]:** 3 maanden na plaatsing van de advertentie

Information

For information, please contact:
Prof. dr. J.B.T.M. Roerdink, director of the Johann Bernoulli Institute, telephone number: +31-50 363 39 31 and e-mail address: j.b.t.m.roerdink@rug.nl; or, Prof.dr. H. Waalkens, telephone number: +31-50 363 4870 and e-mail address: h.waalkens@rug.nl. Additional information about the research institute is available at http://www.rug.nl/jbi. The document Career Paths in Science edition 3 is available at
http://www.rug.nl/fse/organization/vacatures/vacatures/career-paths-in-science-edition-3.