UNIVERSITETET I OSLO

Jobbnorge ID: 257216
Deadline: 2/29/2024
Website: http://www.uio.no/
Scope: Fulltime
Duration: Fixed Term

PhD Research Fellow in Cosmic Microwave Background Data Analysis

About the position

Position as PhD Research Fellow in Cosmic Microwave Background Data Analysis available at the Institute of Theoretical Astrophysics.

No one can be appointed for more than one PhD Research Fellowship period at the University of Oslo. Starting date no later than August 1, 2024.

The fellowship period is 3 years.

A fourth year may be considered with a workload of 25 % that may consist of teaching, supervision duties, and/or research assistance. This is dependent upon the qualification of the applicant and the current needs of the department.

Knowledge development in a changing world - Science and technology towards 2030.

The Faculty of Mathematics and Natural Sciences

Video: https://www.youtube.com/watch?v=t4wvWQEhDEs

Job description

Constraining cosmic inflation and the spectrum of the cosmic microwave background, supervised by Dr. Duncan Watts (duncanwa@astro.uio.no) and Prof. Ingunn Wehus (i.k.wehus@astro.uio.no).

The CosmoglobeHD project, funded by the Research Council of Norway, explores the Universe from the Big Bang to the Solar System, with the goal of measuring primordial gravitational waves in the polarized Cosmic Microwave Background (CMB), as well as measuring the spectrum of the CMB to unprecedented precision. The successful candidate will be trained to work on all aspects of CMB data analysis, including time-ordered data processing, parametric component separation, and cosmological parameter estimation. The candidate will develop and use skills in statistics, high performance programming, and modeling of Galactic and Interplanetary Dust emission.The successful candidate will work with both newly obtained and archival data at both the map level and at timestreams. The first project opportunity is the reanalysis of the FIRAS data from raw timestreams, which both provides an absolute calibration source and currently the best limits on the CMB's deviations from a pure blackbody.

The successful reanalysis of these data will lead to the most sensitive limits on the CMB monopole temperature ever published, and perhaps the world's first detection of distortions in the CMB spectrum. In addition, the candidate will have the opportunity to join the Simons Observatory collaboration to perform component separation to create high-resolution, high-sensitivity maps of the polarized CMB.

The successful candidate will join the CMB&CO group at the Institute of Theoretical Astrophysics (ITA), currently composed of two professors, four researchers, four PhD candidates, and three master's students. The candidate will be able to participate in the larger Cosmoglobe project, including analysis on archival data such as Planck, WMAP, and DIRBE, as well as ongoing projects (COMAP and PASIPHAE) and future projects, including the LiteBIRD satellite mission. In addition to the group at ITA, the candidate will participate in research in an international context, representing CosmoglobeHD and UiO at meetings and conferences. As this position will require a significant amount of programming, we request a code sample to be submitted with the application. In addition, the interview will contain a brief technical portion.

Qualification requirements

The Faculty of Mathematics and Natural Sciences has a strategic ambition to be among Europe's leading communities for research, education and innovation. Candidates for these fellowships will be selected in accordance with this, and expected to be in the upper segment of their class with respect to academic credentials.

- Master's degree or equivalent in astronomy, cosmology, physics, or a related topic, e.g., statistics or computer science.
- Foreign completed degree (M.Sc.-level) corresponding to a minimum of four years in the Norwegian educational system
- Fluent oral and written communication skills in English.

Candidates without a master's degree have until 30 June 2024 to complete the final exam.

Desired qualifications:

- High-performance computing experience
- Experience with astrophysical data analysis
- Knowledge of statistical analysis and Markov Chain Monte Carlo
- Ability to work independently and in collaborations

Grade requirements:
The norm is as follows:

- The average grade point for courses included in the Bachelor's degree must be C or better in the Norwegian educational system
- The average grade point for courses included in the Master's degree must be B or better in the Norwegian educational system
- The Master's thesis must have the grade B or better in the Norwegian educational system
- Fluent oral and written communication skills in English.
- English requirements for applicants from outside of EU/ EEA countries and exemptions from the requirements:

https://www.mn.uio.no/english/research/phd/regulations/regulations.html#toc8

The purpose of the fellowship is research training leading to the successful completion of a PhD degree.

The fellowship requires admission to the PhD programme at the Faculty of Mathematics and Natural Sciences. The application to the PhD programme must be submitted to the department no later than two months after taking up the position.

For more information see:

http://www.uio.no/english/research/phd/

http://www.mn.uio.no/english/research/phd/

Personal skills

- Ability to work in a small team
- Open communication style

We offer

- Salary NOK 532 200 - 575 400 per annum depending on qualifications and seniority as PhD Research Fellow (position code 1017)
- Attractive welfare benefits and a generous pension agreement
- Vibrant international academic environment
- Career development programmes
- Oslo's family-friendly surroundings with their rich opportunities for culture and outdoor activities

How to apply

The application must include:

Cover letter - statement of motivation and research interests

- CV (summarizing education, positions and academic work - scientific publications)
- Copies of the original Bachelor and Master's degree diploma, transcripts of records
- Documentation of English proficiency if applicable
- List of publications and academic work that the applicant wishes to be considered by the evaluation committee
- A code sample, preferably in the form of a GitHub repository.
- Names and contact details of 2-3 references (name, relation to candidate, e-mail and telephone number). In addition, arrange for each of the references to submit their letters to Dr. Duncan Watts (duncanwa@astro.uio.no) before the deadline.

The application with attachments must be delivered in our electronic recruiting system (please follow the link "Apply for this job"). Foreign applicants are advised to attach an explanation of their University's grading system. Please note that all documents should be in English or a Scandinavian language.

Interviews with the best qualified candidates will be arranged.

Formal regulations

Please see the guidelines and regulations for appointments to Research Fellowships at the University of Oslo.

According to the Norwegian Freedom and Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

UiO has an agreement for all employees, aiming to secure rights to research results a.o.

Inclusion and diversity are a strength. The University of Oslo has a personnel policy objective of achieving a balanced gender composition. Furthermore, we want employees with diverse professional expertise, life experience and perspectives.

If there are qualified applicants with disabilities, employment gaps or immigrant background, we will invite at least one applicant from each of these categories to an interview.

Contact information

For general information, please contact Prof. David F. Mota (chair of cosmology and extragalactic astrophysics section), e-mail: d.f.mota@astro.uio.no.

For project specific information, please contact the project supervisors: Duncan Watts duncanwa@astro.uio.no and Ingunn Wehus, e-mail: i.k.wehus@astro.uio.no.

For questions regarding Jobbnorge, please contact HR Adviser Elin Thoresen, e-mail: elin.thoresen@mn.uio.no.

About the University of Oslo

5**he University of Oslo** is Norway's oldest and highest rated institution of research and education with 28 000 students and 7000 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

The Institute of Theoretical Astrophysics is part of the Faculty of Mathematics and Natural Sciences. It presently has 15 permanent professors/associate professors. The Institute employs about 15 postdoctoral and senior research fellows and has about 25 Ph.D. students. The research activity of the Institute of Theoretical Astrophysics is concentrated around solar physics, cosmology and extragalactic astrophysics.

Additional information

Place of service:

Problemveien 7 0313 Oslo (Oslo Municipality)