NTNU
Norwegian University of Science and Technology

Jobbnorge-ID: 110889
Søknadsfrist: Avsluttet
Nettside:
Omfang:
Varighet:

PhD position in theoretical condensed matter physics. Spin-orbit coupled multicomponent superconductors and superfluids NT-11/15

A PhD position is available at the Department of Physics. The appointment has a duration of 3 years with the possibility of up to 1 year extension with 25% teaching duties in agreement with the department. The position is financed by NTNU.

Information about the department
The position is organized at the Department of Physics. Currently, there are 26 professors, 14 associate professors, 4 adjunct professors, 71 PhD research fellows and 16 postdoctoral positions appointed at the Department of Physics. Further information is available at: http://www.ntnu.no/fysikk/english

Our research spans a broad spectrum of natural sciences and technology, which in turn allows us to offer an education that provides a solid basis for future careers. Physics research is carried out in experimental as well as theoretical fields, often across conventional boundaries between disciplines. Our central research areas are materials science, nanoscience, surface physics, modern optics, astrophysics, solar energy, biophysics, and medical technology. Research staff at the institute makes a special effort to increase the awareness and understanding of the importance and impact of physics in our society.

Job description
The main theme of the PhD research will be theoretical investigations of spin-orbit coupled fermionic and bosonic lattice systems featuring multicomponent superconductivity or multicomponent superfluidity. Spin-orbit coupling leads to nontrivial properties of the ground states in quantum condensates such as superconductors and superfluids, in particular when many-body interactions are taken into account. Quantum phase transitions driven by tunable parameters of the system will be studied, as well as transport properties of the ground states of these system. A main concept is that of fractionalized critical points and ground states, whereby elementary quanta of charge and spin are replaced by more fundamental building blocks, leading to novel spin-excitations in topological insulators and novel charge-and spin transport in unconventional (including topological) superconductors. Multicomponent condensates of the types that will be studied are also relevant to certain realizations of entangled condensed matter systems applicable to quantum computing. The application of the transport properties and properties of the excitations out of the novel ground states in nano-scale quantum devices utilizing charge and spin, will be investigated.

Qualifications
The applicant must have an MSc (or equivalent) in physics. The successful candidate must have passed an adequate curriculum in classical mechanics, thermodynamics, electromagnetism, and quantum mechanics. A background in statistical physics and solid state physics is required.

The regulations for PhD programmes at NTNU state that a Master degree or equivalent with at least 5 years of studies and an average grade of A or B within a scale of A-E for passing grades (A best) for the two last years of the MSc is required and C or higher of the BSc. Candidates from universities outside Norway are kindly requested to send a Diploma Supplement or a similar document, which describes in detail the study and grade system and the rights for further studies associated with the obtained degree: http://ec.europa.eu/education/lifelong-learning-policy/ds_en.htm

The position requires spoken and written fluency in the English language. Applicants from non-English-speaking countries outside Europe must document English skills by an approved test.

Terms of employment
The appointment of the PhD fellows will be made according to Norwegian guidelines for universities and university colleges and to the general regulations regarding university employees. Applicants must agree to participate in organized doctoral study programs within the period of the appointment and have to be qualified for the PhD-study.

NTNU has a personell policy objective that the staff must reflect the composition of the population to the greatest possible extent.

The appointment will be made according to the general regulations regarding university employees. PhD research positions are remunerated in salary code 1017, normally at start wage level 50 on the Norwegian Government pay scale, gross NOK 429 400 per year before tax. There is a 2% deduction for superannuation contribution.

Further information can be obtained from professor Asle Sudbø, Department of Physics, NTNU, Tel. +47 735 91868, E-mail: asle.sudbo@ntnu.no

For information about NTNU and Trondheim, see www.ntnu.no and www.trondheim.no/engelsk

The application
Applications with CV, certificates from both Bachelor and Master, possible publications and other scientific works, copies of transcripts, (copies of documentation on English language proficiency test) and reference letters should be submitted. Applications must be submitted electronically through link at this page (jobbnorge.no).
Applications submitted elsewhere will not be considered.

The reference number of the position is: **NT- 11/15**

Application deadline: 15.03.2015

Tilleggsinformasjon

Arbeidssted: