

Open Position for CsF candidates 2015

Department/Institute: Institute of Physics

Subject Area: Theoretical Physics

Name of Supervisor: PD Dr. Axel Pelster

Number of Positions: 3

Type of Positions PhD/Postdoc

Project Title: Theoretical research within the field of ultracold quantum gases

Project Description: Since the experimental discovery of Bose-Einstein condensation in ultracold atomic gases in 1995, there have been several further substantial breakthroughs. Today, systems of ultracold bosonic or fermionic quantum gases allow for a very high level of experimental control concerning, e.g., the underlying trap geometry and the interaction strength. Moreover, they lend themselves to accurate theoretical calculations of their static and dynamic properties, allowing for comparison between theory and experiment with high accuracy. Ultracold atomic and molecular matter can be employed to provide idealized realizations of paradigmatically important many-body models considered in various fields, such as atomic and molecular physics, solid-state physics, and even nuclear physics. The high degree of control over the interatomic interactions also allows one to probe quantum fluids in regimes and under conditions hitherto unavailable. Two examples, which are widely being regarded as cornerstones of recent developments, are provided by the observation of the quantum phase transition of bosons in an optical lattice potential from a superfluid to a Mott insulator, and by the creation of a fermionic superfluid in the BEC/BCS transition regime. Another topic under active consideration now is the emerging possibility to realize the fermionic Hubbard model with ultracold Fermions in optical lattices, and thus to clarify questions on high-T_c-superconductivity by performing measurements on that system.

Academic Requirements: Research experience in one of the following areas: field theory, quantum statistics, many-body theory

Language Requirements: English (fluent; excellent writing skills)

Further Information on Ciência sem Fronteiras at FU http://www.fu-berlin.de/en/sites/brazil/Ciencia_sem_Fronteiras/index.html

Berlin

Application

<http://www.csf-alemanha.de/pt/>

While applying online via this website, please make sure to also upload or send a copy of the following documents to saopaulo@fu-berlin.de:

-letter of application;

-academic CV (including former study programs, internships, publications);

-one or two letters of recommendation of distinguished professors of your university.

Some of the above documents are also required by Capes, but FU Berlin needs an **English or German version of each of the listed documents**. The documents are required by the individual institution responsible for the acceptance process. They may enhance your chances to get accepted. A decision cannot be made unless they have fully been transmitted. For further questions, please contact saopaulo@fu-berlin.de.