
The Institute of Nuclear Physics of the TU Darmstadt announces a position for a

Doctoral candidate - PhD researcher (f/m/d) – 66,67 %

in the group of Professor Dr. Jens Braun in the framework of the Hessian Cluster Project ELEMENTS to be filled starting January 1, 2022. The position amounts to 2/3 full-time and is limited to a contract term of three years up to the end of the funding period on March 31, 2025.

The successful applicant will work in the work area „From microscopic dynamics to the equation of state of dense nuclear matter“ (subproject WP1 „Bulk properties of QCD matter“), which aims at a quantitative understanding of the equation of state of dense nuclear matter.

The Cluster Project ELEMENTS is a collaborative project of Goethe University Frankfurt (leading partner), TU Darmstadt, JLU Gießen, and the GSI Helmholtz Centre for Heavy-Ion Research. It addresses the physics of binary neutron-star mergers from gravitational waves to the nucleosynthesis of heavy chemical elements and electromagnetic signals. This includes determination of the equation of state of matter at extreme densities, temperatures and isospin. Heavy-ion collisions at moderate collision energies provide access to such forms of matter in laboratory experiments. The challenge is to: (a) identify observables sensitive to the EOS and transport coefficients and (b) to connect properties of matter studied in the laboratory with the characteristics of the matter in NSs.

The institute for nuclear physics with around 280 members hosts 15 research groups working in the field of experimental and theoretical nuclear-structure physics, nuclear astrophysics, QCD matter physics and laser and plasma physics. It is one of the largest of its kind world-wide at highest international reputation.

The successful applicant will work on the development and application of theoretical methods for the computation of the equation of state of dense strong-interaction matter. The central method will be the functional renormalization group approach. The aim is to improve existing first-principles constraints for the equation of state of strong-interaction at supranuclear densities.

The applicant is required to have obtained a scientific university degree equivalent to a Master of Science (MSc) in physics at latest at the moment of the starting of the position. Good knowledge of the functional renormalization group approach as well as good knowledge in the use of numerical techniques from the field of fluid dynamics to solve renormalization group equations are an advantage. Good knowledge of program languages (C++ and/or Python) is an advantage as well. Also good communication skills, ability to work in a team and to share knowledge with colleagues will be considered.

Opportunity for further qualification (doctoral dissertation) is given. The fulfillment of the duties likewise enables the scientific qualifications of the candidate.

The Technische Universität Darmstadt intends to increase the number of female employees and encourages female candidates to apply. In case of equal qualifications applicants with a degree of disability of at least 50 or equal will be given preference. Wages and salaries are according to the collective agreements on salary scales, which apply to the Technische Universität Darmstadt (TV-TU Darmstadt).

By submitting your application, you agree that your data may be stored and processed for the purpose of filling the vacancy. You can find our privacy policy on our webpage.

To apply, please send a CV, a letter of motivation, as well as a list of publications and certificates to the director of the institute, Prof. Dr. Dr. h.c. mult. Norbert Pietralla (gd@ikp.tu-darmstadt.de) while referencing the identification number. In case of further questions regarding the position please contact Professor Dr. Jens Braun (jens.braun@physik.tu-darmstadt.de).

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