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In the Department of Physics at the Technische Universität Darmstadt is a position in the Nuclear Physics Institute, linked to the working groups of Professors T. Aumann and A. Obertelli, as an

### **Research Associate (PhD holder) - Young Investigator**

anticipated within the framework of the Cluster Project ELEMENTS, funded by the Hessian ministry, in the scope of a full-time employment. The position is limited in time according to the project funding period from April 1st 2021 until March 31st 2025.

The Institute for Nuclear Physics at the TU Darmstadt hosts 15 research groups with around 250 members working in the field of theoretical and experimental nuclear physics, nuclear astrophysics, as well as laser- and plasma physics. The institute is one of the largest of its kind world-wide at highest international reputation.

The Cluster Project ELEMENTS is a collaborative project of Goethe University Frankfurt, TU Darmstadt, Justus-Liebig University Giessen, and the GSI Helmholtz Center for Heavy-Ion Research. It addresses the physics of neutron stars and their mergers from gravitational waves to the equation of state (EOS) of nuclear matter. This includes investigations of short-range correlations (SRC) between nucleons, as well as hypernuclei. Understanding the properties of nuclear matter at high densities requires the description of SRC between nucleons that are governed by the properties of the interaction of nucleons (NN and 3N) at short distances. The high densities reached in the inner core of neutron stars of several times the nuclear saturation density may favor energetically the presence of strangeness in the form of kaons and hyperons, which would have a strong impact on the EOS and properties of neutron stars. The in-medium hyperon-nucleon interactions can be studied from the spectroscopy of hypernuclei. Experimental programs on the two topics will be conducted at GSI/FAIR at the R3B experimental setup and at the HADES detector with relativistic beams.

The candidate will create her/his/their own group at the Nuclear Physics Institute (IKP) at the TU Darmstadt. The position includes a PhD and a postdoctoral position for the full duration of the Young Investigator Fellowship and during ELEMENTS.

The candidate is expected to play a leading role in the R3B experimental programs on the above topics and to be actively engaged in raising funds. She/He/They will collaborate closely with ELEMENTS PIs. The candidate and her/his/their group will play an active role in the detector developments, experimental program preparation, simulations, and in the data analysis and interpretation. The research results and experience shall be basis for defining future SRC and hypernuclei programs with neutron-rich beams at FAIR at high beam energies.

We are looking for an engaged nuclear physicist with a completed doctorate/PhD and with experience in the research topics of short-range correlations or hypernuclei. Experience with reactions of high-energy radioactive beams in inverse kinematics is of advantage. It is expected that the candidate has international research experience and demonstrates a high publication track record at her/his/their stage of career. She/He/They shall be independent in her/his/their research work. Willingness and experience in executing research projects within large collaborations is expected.

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). Part-time employment is generally possible.

By submitting your application, you agree that your data may be stored and processed for the purpose of filling the vacancy. Here you can find our [privacy policy](#).

Applications including a CV, a letter of motivation, a list of publications, as well as certificates for university degrees and the PhD should be sent electronically to the Managing Director of the Institute for Nuclear Physics, Professor Dr. Dr. h.c. mult. Norbert Pietralla ([gd@ikp.tu-darmstadt.de](mailto:gd@ikp.tu-darmstadt.de)), referencing the identification number.

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**Application deadline: April 28, 2021**

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