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PhD position in Nuclear Physics

## **Understanding the evolution of low-lying $0_2^+$ states in neutron-rich nuclei**

A PhD position of 3 year is open at the Institute of Nuclear Physics (IKP) of TU Darmstadt. The position can be filled as soon as April 1st, 2020.

We propose to study the mechanism of the nuclear shell evolution by exploring the so-far-unobserved low-lying  $0_2^+$  states in neutron-rich nuclei in the vicinity of the Island of Inversion. A new device consisting of a thick liquid hydrogen target and a high-granularity silicon tracker named STRASSE will be built to improve luminosities while allowing missing-mass measurements with satisfactory resolution and precise Doppler correction. STRASSE will be used together with the CsI(Na) array and gamma-ray tracking detectors for the missing-mass and high-resolution in beam gamma spectroscopy. The candidate will take a leading part for the development of the thick liquid hydrogen target as well as the construction of the STRASSE array. She/He will participate the in-beam validation experiment of the prototype as well as the first experiments with the full STRASSE system. She/He will be responsible for the data analysis aiming at understanding the evolution of low-lying  $0_2^+$  states in neutron-rich nuclei.

### **Her/His tasks will focus on**

- 1) Cryogenic system and control command system for the liquid hydrogen target
- 2) Validation of the full system at TU Darmstadt
- 3) Installation of the STRASSE setup and participation to experiments at the RIBF
- 4) Analysis and interpretation of an experiment carried at the RIBF

### **Candidate profile:**

Only candidates holding a Master degree in physics will be considered. The candidate should speak English fluently. Experience in experimental nuclear physics and basic knowledge of C/C++ programming would be assets.

### **Salary:**

The salary will be according to the tariff contract of the TU Darmstadt (TV-TUD), following a 2/3 E13 position. TU Darmstadt is an equal opportunity employer and we especially encourage applications from women. Disabled people with a degree of disability of at least 50% will be preferred if equally qualified.

**Contact:** Prof. Alexandre Obertelli (aobertelli@ikp.tu-darmstadt.de).