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PhD position in Nuclear Physics

Benchmarking nucleon removal from quasifree scattering

A PhD position is open in the group of Dr. Alexandre Obertelli at the Institute of Nuclear Physics (IKP) of TU Darmstadt, Germany. The position can be filled as soon as possible.

Project description:

The structure of rare isotopes can be studied in depth via direct reactions in inverse kinematics. Among used reactions, quasifree scattering of a nucleon from the projectile from interaction with a proton target is considered as one of the cleanest reaction mechanisms since exclusive measurements can be performed. The accuracy of the models for deeply bound nucleon removal still has to be demonstrated. A large source of uncertainties is the re-interaction probability of the recoil proton(s) with the recoil nucleus following the quasifree scattering. The proposed project aims at providing a clear-cut benchmark for such models based on a joint analysis of $(e, e'p)$ and $(p, 2p)$ data.

As a second step of the thesis, two nucleon removal is proposed to be investigated on both the experimental and theoretical sides. Theoretical developments will be made in collaboration with reaction mechanism theorists. $(p, 3p)$ data from RIKEN will be analysed and compared to the model predictions.

The thesis is part of the Collaborative Research Centre SFB 1245 at TU Darmstadt «From fundamental interactions to structure and stars». Related information can be found at <https://www.sfb1245.tu-darmstadt.de>.

Candidate profile:

Only candidates holding a Master degree in physics will be considered. The ideal candidate is strongly motivated by both experimental and theoretical nuclear physics, has knowledge of C++ and speaks English fluently. Experience with data analysis would be an asset.

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

Interested candidates should send a letter (or email) of motivation, a contact for reference and a cv to aobertelli@ikp.tu-darmstadt.de. Applications received by February 1st, 2018 will receive full consideration. The call will remain open until the position is filled.
