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TECHNISCHE
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PhD position in Nuclear and Particle Physics

PUMA: probing the density tail of radioactive isotopes with antiprotons

A PhD position is open in the group of Dr. Alexandre Obertelli at TU Darmstadt, Germany. The position can be filled now.

Project description:

A PhD position is opened for the PUMA project. PUMA is a starting project (01/2018) funded by the European Research Council with the objective of probing the nuclear density tail of short-lived nuclei by use of trapped antiprotons. The project will be held at CERN eventually. The first part of PUMA consists of designing a penning trap for long-period antimatter storage, and the corresponding detection.

During her/his thesis, the PhD candidate will:

- (1) develop the simulation framework for the experiment and will quantitatively determine the sensitivity of PUMA to the characterisation of neutron skins and halos,
- (2) develop a ultra-high vacuum cryostat for the trap. Prototypes will be built and tested, to decide the final design.
- (3) build a non-destructive detection system to monitor the trapped charged particles in the trap.
- (4) implement the trapping scheme with protons and test the full device in realistic conditions in view of future experiments at CERN.

The hardware development will be done in collaboration with European and Japanese institutes and universities. During the thesis, the candidate will participate to experiments with antiprotons at CERN/ELENA.

Candidate profile:

Candidates should hold a Master degree in physics or engineering. The thesis will take place in an international environment, with significant components of hardware developments and numerics. The ideal candidate is driven by science, motivated by challenging developments, has knowledge of C++ and speaks English fluently.

The salary will be according to the tarif 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 a degree of disability of at least 50% will be preferred if equally qualified.

Interested candidates should send a letter of motivation, at lest a contact for reference, and a cv to aobertelli@ikp.tu-darmstadt.de. The call will remain open until the position is filled.