

## **Post-doctoral scientist**

Experimental physics

### **Study of (anti)hydrogen atom and ion formation in a dense positronium cloud for the GBAR experiment**

Place of work: CEA Saclay (France)

Contact: Laszlo Liskay

CEA Saclay IRFU

laszlo.liskay@cea.fr

25 March 2016

The GBAR (Gravitational Behaviour of Antihydrogen at Rest) group at IRFU (Institute of Research into Fundamental Laws of the Universe) of CEA Saclay (a large research institute near Paris, France) has an immediate opening for a post-doctoral researcher. The GBAR collaboration aims at the measurement of the gravitational acceleration of a neutral antihydrogen atom in the gravitational field of the Earth. The experimental scheme will use anti-ions to produce extremely cold antimatter atoms for the measurement. The successful candidate will take part in the effort to produce and study, for the first time, an antimatter ion, the antihydrogen ion, under controlled circumstances in the laboratory. The immediate aim is to determine the cross sections of key reactions leading to the antihydrogen ion production and those of their matter equivalents. In the first phase, experiments with a proton source will be performed at CEA Saclay, France, using a high field Penning-Malmberg positron trap to accumulate positrons, supplied by a linac-based slow positron beam.

The successful candidate will take part in the construction and realization of the measuring apparatus, in the experiments and data analysis. He or she will perform numerical simulations of critical parts of the setup and write programs to analyse the results. In a later phase of the work the post-doctoral scientist should take part in the installation of the experiment at CERN, where further measurements will be performed, aiming at antihydrogen and antihydrogen ion production.

A physicist with a recent PhD and with strong experimental background is sought for. Skills in among vacuum technology, particle detection, ion or electron/positron beam optics, instrument control, data acquisition and analysis would be appreciated. Knowledge of Labview, C++, ROOT, GEANT4 are considered to be an asset. The work will be done in an international collaboration, good command of English is essential.

The length of the contract is 24 months. The position is available immediately, approximately 3 months should be foreseen for employment formalities.

Applications including a CV, list of publications and conference talks and a cover letter should be sent to Laszlo Liskay (laszlo.liskay@cea.fr).