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Postdoc scholar position on Nuclear Low-Energy Collisions Theory for Antiprotonic Research (NECTAR)

Project description

We seek a highly motivated postdoctoral scholar to join the Nuclear Low-Energy Collisions Theory for Antiprotonic Research (NECTAR) project. This postdoctoral project aims to compute the annihilation properties of the antiprotonic atoms made of halo nuclei. The scholar will participate in a systematic study of the correlation between nuclear density and annihilation probability and ***lead*** *the project work package aiming to compute the annihilation properties of the* ***first simple antiprotonic atom made of halo nuclei*** *(^{11}Be). Our tools are a combination of ab initio methods and effective field theory. The scholar will work under the scientific supervision of Dr. G. Hupin and in collaboration with a PhD student who has been working on the NECTAR project for a year.*

In a second stage, the successful candidate will drive the development of new algorithms to speed up the solution of the few-body problem, enabling the project to reach more complex halo systems. This work will be done in collaboration with Dr. R. Lazauskas at the Institut Pluridisciplinaire Hubert Curien (IPHC) in Strasbourg, France.

Furthermore, as CERN/PUMA experiment is now reviving the interest of the community in matter/antimatter interactions, our theoretical endeavor on this largely unexplored frontier, may open new opportunities to understand the physics of matter-antimatter systems, and the problem of baryogenesis in the universe. We expect the candidate to participate in exploring new directions during the term of his contract.

This postdoctoral project has been selected by the Agence Nationale de la Recherche (ANR) under the AAPG 2021 funding scheme for a 24-month funding period starting in November 2023. Dr. G. Hupin is the sole principal investigator (PI) of the project, which includes collaborators from the CNRS at IJClab and IPHC.

Information to the applicants

The candidate must have a PhD degree in physics (particle, hadronic or nuclear) with a strong focus on theory. The project requires sound knowledge in theoretical physics, computing and High-Performance Computing (HPC), a high level of communication skills, both oral and written (English required, French courses are provided to a successful candidate from abroad) to be able to present at conferences and write scientific articles for publication in refereed journals. We are looking for a research fellow who will be able to become fully involved with the project, eager to learn, with a degree of independence thinking and strong motivation to develop skills in research as well as the required technical skills computing/HPC etc... In addition, the candidate must be able to work in a team.

French postdoc contracts come with benefits up to ~ 50 *days of paid vacations (not counting holidays), social security protection, retirement benefits (to be claimed at 64-7yo), unlimited sick leaves (the first three days are not paid), complementary training within the host institution...*

***Applications must include** a detailed CV; a list of peer-review publications as author and co-author; at least two references (senior scientists who may be contacted); a cover letter of one page; a one-page résumé of the PhD project and documents required for the background check (see below).*

Researchers at IJCLab are subject to background check. Therefore, the date of employment written above should be understood as provisional (documents: copy of passport, detailed CV, phone number, home postal address, current employing organization and address of the organization).

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