

Post Doc M/F in nuclear physics, ACTAR TPC instrument

General information

Reference : UPR3266-VIRLEF-027
Workplace : CAEN
Date of publication : Monday, November 8, 2021
Type of Contract : FTC Scientist
Contract Period : 24 months
Expected date of employment : 1 January 2022
Proportion of work : Full time
Remuneration : 2663 euros gross monthly
Desired level of education : PHD
Experience required : 1 to 4 years

Missions

The candidate will work with the ACTAR TPC team and hence be part of the R&D and operation of this detector. In particular, they will be in charge of characterizing the gas ageing process using the MAYAITO detector, before setting up a gas recirculating/purifying system for ACTAR TPC. Finally, they will also be in charge of testing the large gap micromegas solution for use of ACTAR TPC with pure noble gases. He/She will participate to the ACTAR TPC experimental campaigns in GANIL, including the detector and acquisition tests and tuning and online monitoring of the detector during the experiments

Activities

R&D on ACTAR TPC :

- Study/Tests of large gap micromegas for ACTAR TPC
- Study/Tests of gas recirculating/purifying system

Involvement in the running of ACTAR TPC :

- Tests of the detector prior to experiments
- Participation in experimental campaigns

Skills

Fields of expertise :

- Subatomic physics/interactions of radiation with matter
- Gas detectors
- Data analysis

Skills :

- Theoretical and practical use of gas detectors
- Proficiency with analysis tools ROOT and C++ programming

Softs Skills

- Team-work
- Curiosity and desire to share knowledge

Work Context

The GANIL is today one of the four major laboratories in the world dedicated to research with ion beams. Research fields stretch from radiotherapy applications to the physics of atoms and atomic nuclei, and from condensed matter to astrophysics. In the field of

nuclear physics, GANIL has produced many discoveries concerning nuclear structure, thermal and mechanical properties of nuclei and « exotic » nuclei not naturally occurring on Earth.

GANIL (with about 280 permanent staff) is situated in Caen, a city in Lower Normandy, France. It is jointly run by the Fundamental Research Division of the French Atomic Energy Commission (CEA/DRF) and the French National Centre for Scientific Research (CNRS/IN2P3). As a national host laboratory, GANIL serves the French, European and International research community.

Within the Physics Division (DPHY), the post-doctoral researcher will work as part of the ACTAR-TPC team.

The Active Target Time Projection Chamber (ACTAR TPC) is operational since 2018. It was successfully commissioned for resonant scattering, inelastic scattering and for studying proton decay of neutron deficient nuclei. In order to extend its research fields to the production and the decay-study of superheavy nuclei, some upgrades are necessary. For the production of superheavy nuclei, it is mandatory to use isotopic gases. Due to the important cost of these gases, it is necessary to equip ACTAR TPC with a recirculation/purification system. For the decay studies of such nuclei, it is also mandatory to operate the TPC at very low pressure, and hence to modify the current amplification system.

These two R&D steps will strongly ameliorate ACTAR TPC and the detection in general at GANIL.

Moreover, ACTAR is one of the flagship detectors for nuclear physics experiments at GANIL.

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