

Unité Mixte 8608
CNRS/IN2P3 – Université Paris Sud

Research Department

Institut de Physique Nucléaire - Orsay
15 Rue Georges Clemenceau
91 406 Orsay (France)

Postdoctoral position in experimental hadron physics

A postdoctoral position in experimental hadron physics is opened at the Institut de Physique Nucléaire – Orsay (France). The successful candidate will join the hadronic physics group for a period of 3 years to work on the electromagnetic physics program of the PANDA experiment (FAIR/Darmstadt) and in the corresponding technical developments.

The laboratory

IPN Orsay is a joint laboratory of the CNRS and the University of Paris Sud. It is the largest nuclear physics laboratory in France with more than a hundred researchers and faculty members and thirty PhD students who conduct research on dense and hot primordial matter, the origin of cosmic showers, the physical limits of atomic nuclei, the properties of short lived aggregates of protons and neutrons in stars, and the structure of matter in terms of quarks and gluons. The institute has technical divisions of primary importance, with more than 200 engineers and technicians conducting frontier R&D in accelerator physics and instrumentation.

The PANDA group

The PANDA group at the IPN Orsay consists currently of seven permanent scientists and three PhD students. Since 2004 we are developing an ambitious program focused on the electromagnetic channels in antiproton proton annihilation reactions. The program contains detailed studies of the channels antiproton $p \rightarrow \ell^+ \ell^-$ and $\ell^+ \ell^- X$ (where ℓ is a lepton) which the group wants to study with the FAIR machine, under construction in Darmstadt (Germany). These channels give access to the proton structure via the electric and magnetic form factors of the proton in the time-like region.

The job

The candidate will take an active part in the activities within the group which cover technical, computational and phenomenological aspects. He/she is expected to contribute to the validation of the calorimeter prototype, which includes tests with cosmic rays and with tagged photon and electron beams. These activities are to be executed in collaboration with the IPN detector R&D team. An important part of the

task will be to verify that the measured experimental performances are in accordance with the simulated ones. These results will then be used to validate the final electromagnetic channels simulation under the most realistic conditions.

An other task will be the participation in the PANDARoot Monte Carlo, which includes code development for particle ID, tracking and filtering purposes, and physics channels simulations, based on locally developed event generators.

Part of the group is also involved in the HADES experiment at GSI. This program is currently taking data, thus providing a wealth of results for meson and e^+e^- pair production. Notably the IPN team is involved in the study of the reactions $pp \rightarrow ppe^+e^-$, $np \rightarrow npe^+e^-$ and $\pi^-p \rightarrow ne^+e^-$, giving access to time-like transition form factors of baryons, in very close connection to the PANDA electromagnetic physics program. A participation of the candidate to this activity is encouraged, at the level of 20 to 30%.

Profile required

Applicants should have a Ph.D. in experimental physics. One to five years of post-doctoral experience in hadronic physics, with experience in simulation and/or analysis of experiments is preferred.

Candidates should send a brief description of their work experience, and a short CV to Thierry Hennino (hennino@ipno.in2p3.fr) before 31 may 2013. Letters of reference are appreciated. Any inquiries should be sent to the same address.