Postdoctoral position in experimental fission studies

Within the CoPhyNu agreement, Collaboration in Nuclear Physics, between CEA/DAM and CEA/DRF, we invite applicants for a postdoctoral position in the DPhN department of CEA/Irfu in Saclay (FRANCE). The contract is for two years.

CoPhyNu offers the opportunity to conduct theoretical as well as experimental studies where both CEA/DAM and CEA/DRF are involved. The funding of the present postdoctoral position, aiming at studying the prompt fission neutron spectra (PFNS) in the spontaneous fission of ^{252}Cf, is one such opportunity. The aim of the experimental project is to measure PFNS as a function of fragment mass and total kinetic energy (TKE) in coincidence with delayed gamma rays emitted during the decay of micro-second isomers populated in fragments via the fission process. This joint experimental effort is expected to provide an unprecedent level of selectivity for PFNS, based on three-fold coincidences (Fragment – gamma ray – neutron), that will subsequently be used in order to test phenomenological models describing the decay of fission fragments.

The detection system will consist of a twin Frisch grid ionization chamber for fission fragment detection. The detector, similar to those we already built for fission studies, will be built purposedly for this project. It will provide both the mass and the TKE information for the fission fragments. The twin chamber will be loaded with a newly produced ultra-thin ^{252}Cf spectroscopic source. The twin ionization chamber will be surrounded by an array of 16, large volume, NaI detectors to measure isomeric gamma rays. These detectors are part of the SFyNCS array at CEA/DAM. In addition, 24 neutron detectors, part of the VENDETTA array at CEA/DAM, will be used for neutron fission detection. The measurement will take place in the first semester of 2026 and will last for 3 months.

The successful candidate will take part in every aspect of the project and must have a Ph.D. in experimental nuclear physics with good skills in instrumentation and data analysis.

Candidates should send a cover letter describing their research activities and a Curriculum Vitae including one or two letters of recommendations to L. Gaudefroy (laurent.gaudefroy@cea.fr) by 15 October 2025 for a taking office by the beginning of 2026.