

S3 Post-doc position 2011-2012:

The Super Separator Spectrometer (S^3) is an innovative device designed for fundamental physics experiments with the very high intensity stable heavy ion beams of the superconducting linear accelerator of the SPIRAL2 facility at GANIL. This device is a key element of research driven by an international collaboration (GANIL, Irfu, CSNSM, IPHC, ANL in U.S. and KU Leuven in Belgium). The unprecedented intensities of SPIRAL2 combined with the very competitive and unique S^3 facility will open new horizons for nuclear physics, e.g. super heavy elements with the ultimate goal of the synthesis of new elements to extend the Mendeleev table, but also the neutron deficient nuclei, and notably the region of the doubly-magic nucleus ^{100}Sn , one of the critical benchmark of the nuclear structure far from stability.

The design of S^3 is based on large aperture, superconducting triplets of multipoles, that enable to combine the large transmission of the nuclei of interest with a high selectivity. The two stages of S^3 are a momentum achromat followed by a mass spectrometer. They have the function of rejecting the high intensity beam and measuring the mass of the transmitted reaction products. S^3 is coupled with a rotating target that can bear the very high beam power and that can hosts radioactive actinide materials for specific experiments on the study and synthesis of superheavy elements. To be associated with S^3 are also planned an implantation decay station for the detailed spectroscopy of the radioactive nuclei, and also a “low energy branch” to perform measurements of the ground state properties of these rare atoms.

After a long work of design of the spectrometer and the associated detection systems, the S^3 collaboration is preparing the 2013-2014 commissioning phase. The S^3 spectrometer is a new device for the nuclear physics community with ambitious technologic choices that allow handling the unprecedented power deposited by the primary beam. Therefore, the spectrometer has to be carefully characterized after construction accomplishment.

The successful candidate will be expected to play a leading role in the commissioning preparation phase of S^3 . At the end of the proposed 18 months postdoctoral contract, the candidate will provide to the collaboration a detailed commissioning plan. The commissioning will investigate all aspects of the spectrometer for all the physics cases (Optics, primary target, transmission, rejection, diagnostics, detection, test reactions...). Ideally, the candidate is a physicist skilled on spectrometer operation.

Additionally, the candidate can be involved in the operation of spectrometer currently running at the GANIL facility.

Applications should include a CV, references and a statement of interests.

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