PHENIICS Fest 2017

Rapport sur les contributions

https://indico.ijclab.in2p3.fr/e/3419

ID de Contribution: **1** Type: **Poster**

Progress of PrFeB Based Hybrid Cryogenic Undulators at SOLEIL

Cryogenic Permanent Magnet Undulator (CPMU) takes advantage of the enhanced field performance of permanent magnets when cooled down to low temperature, enabling shorter period with sufficient magnetic field to achieve high brightness radiation in the X-ray domain. Several CPMUs have been manufactured at SOLEIL. The first CPMU of period 18 mm (U18), optimized with a phase error of 3.2° at 77 K, has been installed and operated for the past 5 years at SOLEIL NANOSCOPIUM beamline. We report on photon beam based alignment enabling for a better adjustment of the offset with a precision of 50 µm, and on the correction of the taper with a precision of 5 µrad to enhance the radiation. A second U18 cryo-ready undulator, with a new mechanical and magnetic sorting of module shimming, has attained a phase error of 2.3° without any further adjustments after the assembly. Currently, two more cryogenic undulators are being built; a 2 m long U18 for SOLEIL ANATOMIX beamline, and a 3 m long U15 reaching a magnetic gap of 3 mm. The new challenges encountered with magnetic measurements and mechanical designs for U15 are presented.

Auteur principal: M. GHAITH, Amin (PhD student)

Orateur: M. GHAITH, Amin (PhD student)

ID de Contribution: **2** Type: **Poster**

Electroweak Higgs Sector of Brane Worlds and Extra Dimensions

In the Standard Model (SM) of Particle Physics, the electroweak (EW) symmetry breaking pattern is the less known and understood. With the discovery of a Higgs-like boson by the Large Hadron Collider (LHC) experiment in 2012, the Brout-Englert-Higgs (BEH) mechanism, which involves a new scalar field to break the EW gauge symmetry, seems to be at work in Nature. Nevertheless, the origin of the BEH field remains a mystery and it suffers from a technical naturalness puzzle: why the Higgs boson is so light compared to the quantum gravity scale? The Higgs sector can also play an important role to understand the open questions of the SM, like the flavour landscape, the masses of the neutrinos, the dark components of the Universe, the inflation… My PhD subject involves studying models with spatial extra dimensions, which could solve some of these questions. Several scenarii are present in the literature: brane worlds, warped and/or magnetized extra dimensions, Gauge-Higgs Unification (GHU). In practice, I develop models using some of these frameworks, from which I dig out the first phenomenological consequences.

Auteur principal: M. NORTIER, Florian (Laboratoire de Physique Théorique d'Orsay)

Orateur: M. NORTIER, Florian (Laboratoire de Physique Théorique d'Orsay)

ID de Contribution: **3** Type: **Talk**

Quench Tests Analyses of the First JT-60SA Toroidal Field Coils

mercredi 31 mai 2017 18:05 (15 minutes)

JT-60SA is a fusion experiment which is jointly constructed by Japan and Europe, and which shall contribute to the early realization of fusion energy by providing support to the operation of ITER and by addressing key physics issues for ITER and DEMO. The JT-60SA is based on the existing infrastructure of JT-60U experiment and is upgraded by using **superconducting coils**. JT-60SA tokamak consists of 18 **Toroidal Field (TF)** superconducting coils which will be provided by European industry and tested in a **Cold Test Facility (CTF)** at CEA Saclay.

In order to check the performance of the JT-60SA TF coils and hence mitigate their possible fabrication risks, the coils have been cooled in the CTF with supercritical helium at **5 K** and have been supplied at the nominal current of **25.7 kA**. One major test performed is the so-called "**quench test**", or "**temperature margin test**", during which the inlet helium temperature of the **Winding Pack (WP)** is controlled to increase progressively up to quench followed by a fast discharge of current during about **60 s**. The measurements of voltage, pressure and temperature allow me to study the **quench propagation** in the coil and the corresponding physical phenomena. **Four quench dynamic phases** will be identified during the analyses of the coils behavior.

Auteur principal: M. HUANG, Yawei (CEA Saclay)

Co-auteurs: M. TORRE, Alexandre (CEA Cadarache); M. CIAZYNSKI, Daniel (CEA Cadarache); M. GENINI, Laurent (CEA Saclay); M. DECOOL, Patrick (CEA Cadarache); Dr ABDEL MAKSOUD, Walid (CEA Saclay)

Orateur: M. HUANG, Yawei (CEA Saclay)

Classification de Session: Nuclear energy

ID de Contribution: **5** Type: **Talk**

The study of gamma emission in the fission process

mardi 30 mai 2017 17:25 (15 minutes)

Prompt fission gamma spectra (PFGS) have been recently measured for the 238U(n,f) and 239Pu (n,f) reactions using fast neutrons produced by the LICORNE directional neutron source. The setup consisted of ionization chambers containing the actinides samples and LaBr3 scintillators to measure the coincident prompt fission gamma rays. Prompt fission gamma rays were discriminated from prompt fission neutrons using the time-of-flight (TOF) technique. The total energies, multiplicities and average energies of gamma-rays per fission were extracted from the PFGS. In addition, information on the dependence of PFGS characteristics as a function of excitation energy was obtained.

These experiments provide important nuclear data for reactor physics, as an input for gamma heating calculations, since the gamma heating effect can be under-estimated by up to ˜30% with present nuclear data. Furthermore the new PFGS information will be useful from a fundamental physics point of view, where results can be compared with many competing theoretical predictions to refine models of fission process. Observables like multiplicities, mean energies and total energy can shed light on the energy sharing between fragments and the angular generation mechanism in fission process. It will also lead to a better understanding of the competition between neutron and gamma emission.

Auteur principal: M. QI, Liqiang (IPN NESTER)

Orateur: M. QI, Liqiang (IPN NESTER)

Classification de Session: Nuclear physics - experimental

ID de Contribution: **6** Type: **Poster**

Influence of target thickness on the realease of radioactive atoms

A research program is developed with the installation ALTO (Accélérateur Linéaire et Tandem d'Orsay) at the Institut de Physique Nucléaire in Orsay to provide intense ion beams of new exotic neutron-rich nuclei. For this purpose, optimizing the fission products (PFs) release is a crucial step. Indeed, the first results demonstrated the correlation between the open porosity and the release properties of the uranium carbide (noted UCx, as UC2 and UC are stabilized) target. To go further with this optimization, a study of the milling of uranium oxide powders showed that a multi-ball mill by dry grinding allowed to obtain a nanometer precursor powder. Ultimately, using this powder would provide a nanometric structure of the sintered target and a higher release efficiency by limiting the diffusion path of the FPs through the UCx grains. To test this hypothesis, this powder was used to produce targets following a protocol developed at CERN ISOLDE on lanthanum carbide targets then transposed to UCx targets. The particularity of this protocol is to use nanotubes as carbon source in the carboreduction of UO2 nanopowder into UCx. The structural and microstructural properties of these new targets will be characterized by X-ray diffraction, secondary electron microscopy, He pycnometry and Hg porosimetry. The impact of this microstructure on the fission product release efficiency, determined by spectrometry, will be studied during an irradiation campaign carried out at ALTO.

Auteur principal: M. GUILLOT, Julien (IPNO - groupe NESTER)

Orateur: M. GUILLOT, Julien (IPNO - groupe NESTER)

ID de Contribution: **7** Type: **Talk**

Development of the Fast and Efficient Gamma Detector Using Cherenkov Light for Positron Emission Tomography

mardi 30 mai 2017 12:40 (15 minutes)

Positron emission tomography (PET) is a nuclear imaging technique widely used in oncology. Decay of the tracer emits positrons, which annihilate in the nearby tissue. Two gamma quanta with the energy 511 keV are produced by positron annihilation and allow one to reconstruct the annihilation vertex and distribution of the tracer activity in the body of the patient. I developped an innovative detector using the Cherenkov photons produced by electrons from the photo-ionization conversions of 511 keV gamma, with a high efficiency and time resolution, in parallel with some simulations. I will present in my talk some basics about PET, then the detector which I built and my first results.

Auteur principal: Mlle CANOT, Clotilde (CEA IRFU)

Orateur: Mlle CANOT, Clotilde (CEA IRFU)

Classification de Session: Medical imaging

ID de Contribution: **8** Type: **Talk**

Residual Ion Dynamics in Electron Storage Rings

mercredi 31 mai 2017 17:05 (15 minutes)

Ions produced by ionization of the residual gas in electron storage rings can significantly degrade the performance of a machine and produce various beam instabilities. To cure more effectively these problems it is important to understand the ion dynamics in the accelerator. The ions undergo the effect of the electron beam crossing and go through strong transverse oscillations and a longitudinal drift. In this talk a model of the ion motion will be presented, simulation results including the beam ion interaction and ion clearing means will be explained in ThomX case.

Auteur principal: M. GAMELIN, Alexis (Laboratoire de l'Accélérateur Linéaire)

Co-auteurs: Dr BRUNI, Christelle (LAL); M. RADEVYCH, Danylo (LAL)

Orateur: M. GAMELIN, Alexis (Laboratoire de l'Accélérateur Linéaire)

Classification de Session: Accelerators

ID de Contribution: **9** Type: **Talk**

Development of new metrology protocols for chalcogenide materials related to process parameters

mercredi 31 mai 2017 16:45 (15 minutes)

Chalcogenide materials are composed of S, Se or Te elements from group VI of the periodic table. For these elements, the sequence of S, Se and Te shows that bonding changes from molecular, covalent, to metallic. They are receiving extensive interest not only for application in advanced memories (Phase Change RAM, Current Bridge RAM) and photovoltaics (i.e. CZTS: Cooper Zinc Tin Sulfide), but also in the development of 2-D materials based in transition metals (e.g. MoS2, WS2) [1]. The properties of the chalcogenides are deeply influenced by the chemical composition, the surface/interface effects and the depth-profile compostion [1]. Hence adequate metrology needs to be developed to probe these materials.
The objective of this PhD is to develop advanced metrology protocols required to support the development of the novel chalcogenide materials and their integration in complex technological stacks. The chemical composition is being investigated using Wavelength Dispersive X-Ray Fluorescence (WD-XRF). The composition profiles is under study by combination of X-Ray Reflectometry (XRR) with Grazing Incidence X-Ray Fluorescence (GI-XRF). These in-depth investigations run on state-of-the-art tools and they is being complemented by fluorescence (GiXRF) experiments at the SOLEIL/Metrology synchrotron line. X-Ray Photoemission Spectroscopy (XPS) and Angle-Resolved XPS protocols is under development for surface/interface effects and shallow elementary depth profile.
The combination of Lab and synchrotron based metrology will allow detailed understanding of the chemistry of chalcogenide thin films. The metrology protocols will be applied to the characterization of innovative films elaborated by PVD and CVD (ternay alloys, 2D transition metal dichalcogenides, etc).

Key-words: Chalcogenides; Thin-films; Chemical composition; X-Ray Metrology; XRF; XPS; GIXRF-XRR

[1] Tanaka, Keiji, and Koichi Shimakawa. Amorphous chalcogenide semiconductors and related materials. Springer Science & Business Media, 2011.

Auteur principal: M. BATISTA PESSOA, Walter (LETI CEA-GRENOBLE)

Co-auteurs: Dr ROULE, Anne (CEA-LETI); Dr NOLOT, Emmanuel (CEA-LETI); Dr LEPY, Marie-Christine (CEA-LIST)

Orateur: M. BATISTA PESSOA, Walter (LETI CEA-GRENOBLE)

Classification de Session: Accelerators

ID de Contribution: **10** Type: **Poster**

Search for the Lepton Universality Violation using b-baryons

Lepton universality is one of the most important ingredients of the Standard Model of particle physics (SM). It means that leptons (e.g., electrons and muons) behave in the same way, i.e., have the same couplings to gauge bosons.
Several tests of the Lepton universality were performed up to date. Two previous measurements of LHCb, R_K and R_Kstar, show signs of deviations from the SM predictions in the B-meson decays. The following measurements are needed to check whether these hints are really deviations from the SM, or rather statistical fluctuations.
One of the possibilities is to measure the Lepton universality using b-baryons.
Our goal is to measure R_Lambdastar which is the ratio of probablities that Lambda_b baryon decays to (Lambdastar mu mu) or to (Lambdastar e e).
Here, the outline of the analysis, as well as signal selection and background studies for the Lambda_b decays will be presented.

Auteur principal: M. LISOVSKYI, Vitalii (LAL)

Orateur: M. LISOVSKYI, Vitalii (LAL)

ID de Contribution: **11** Type: **Poster**

Study of antiproton-proton annihilation reactions and experimental contribution to hadron polarimetry

This work, set in the framework of hadron physics, reports on a phenomenological and an experimental study dedicated to nucleon internal structure, both related to hadron electromagnetic form factor measurements in the time-like and in the space- like regions.

Auteur principal: Mlle WANG, ying (Institut de Physique Nucléaire Orsay)

Orateur: Mlle WANG, ying (Institut de Physique Nucléaire Orsay)

ID de Contribution: **12** Type: **Talk**

The atomic nucleus : A natural laboratory of complexity

mardi 30 mai 2017 11:20 (15 minutes)

The understanding of the structural properties of nuclei is a long-standing issue. Indeed, the underlying
complexity of a many-body fermionic system in strong interaction, led to the arising of wide panel of
phenomena and behavior. Thus an universal treatment of such properties is particularly challenging.
We'll give a short overview of the usual techniques used to describe nuclear properties, illustrating each method with several example. Moreover we will discuss the impact of state-of-the-arts nuclear models, on observables of use in apparently
unrelated fields, in particular Cosmology. To conclude I'll try to emphasize the link between theoretical description and experimental observables.

Auteur principal: M. LASSERI, Raphaël-David (Institut de Physique Nucléaire d'Orsay)

Orateur: M. LASSERI, Raphaël-David (Institut de Physique Nucléaire d'Orsay)

Classification de Session: Nuclear physics - theory

ID de Contribution: **13** Type: **Poster**

Study of charmonium production using decay to hadronic final states with the LHCb experiment

This work is devoted to charmonia prompt and b-decays production study via charmonia decays to $\phi\phi$ and $p\overline{p}$ in order to test existing Non-Relativistic QCD predictions.

Using decays to ϕ-meson pairs, the inclusive production of $\chi_{c0,1,2}$ in b-hadron decays is studied with pp collision data corresponding to an integrated luminosity of $\int \mathcal{L}dt = 3.0\ fb^{-1}$, collected by the LHCb experiment at centre-of-mass energies of 7 and 8 TeV. Differential $\eta_c(1S)$ production using its decay to $p\overline{p}$ in proton-proton collisions at the center of mass energy $\sqrt{s} = 13\ TeV$ with an integrated luminosity of $\int \mathcal{L}dt = 2.0\ fb^{-1}$ was measured.

Auteur principal: M. USACHOV, Andrii (LAL)

Co-auteur: Dr BARSUK, Sergey (LAL)

Orateur: M. USACHOV, Andrii (LAL)

ID de Contribution: **14** Type: **Poster**

Study of key resonances in the 30P(p,γ)31S reaction in massive classical novae

Classical novae outbursts are the third most energetic explosions in the Universe after gamma-ray bursts and supernovae. During this explosive burning, nucleosynthesis takes place and the newly synthesized material is ejected into the interstellar medium. In order to understand these objects, the study of presolar grains and γ-ray emitters are of specific interest since they can give direct insights into the nucleosynthesis processes and isotopic abundances.
The 30P(p,γ)31S reaction is one of the few remaining reactions with a rate uncertainty which has a strong impact on classical novae model predictions. Sensitivity studies have shown that it has the largest impact on the predicted elemental abundance ratios of Si/H, O/S, S/Al, O/P and P/Al, which can be used to constrain physical properties of classical novae. The 30Si/28Si isotopic ratio, which is an important signature that helps to identify presolar meteoritic grains of a likely nova origin, depends also strongly on the 30P(p,γ)31S reaction rate.
To reduce the nuclear uncertainties associated to this reaction we performed an experiment at ALTO facility of Orsay using the 31P(3He,t)31S reaction to populate 31S excited states of astrophysical interest. The tritons were momentum analyzed using the Enge Split-Pole magnetic spectrometer and the decaying protons were detected in coincidence in an array of DSSSDs (Double Sided Silicon Stripped
Detectors). The comparison of the focal plane spectra obtained for single and coincidence events will allow the extraction of the proton branching ratios.
In this poster we will present the astrophysical context of this work, the experiment set up and the analysis of the single events from the Split-Pole focal plane detector.

Auteur principal: Mlle MEYER, Anne (Institut de Physique Nucléaire d'Orsay)

Orateur: Mlle MEYER, Anne (Institut de Physique Nucléaire d'Orsay)

ID de Contribution: **15** Type: **Talk**

Transfer reactions induced with 56Ni: pairing and N=28 shell closure

mardi 30 mai 2017 17:45 (15 minutes)

The experimental study of the neutron-proton pairing is a challenging task that relies on the strength of the physical observables. Binding energies of N = Z nuclei and rotational properties of finite nuclei are some of the tools used up to now. Despite, their robustness to prove other physical phenomena, they are shown to be insufficient to prove the existence of T =0 pairing collectivity. On the other hand, two-neutron transfer reactions have been a powerful tool to understand neutron pairing correlations in nuclei, because the transfer is proportional to the number of pairs. In addition, since the number of neutron-proton pairs decreases very quickly as the neutron-proton imbalance grows, the transfer of a deuteron-like pair from even-even to odd-odd nuclei stands out the best tool to investigate neutron-proton correlations.

During spring 2014 the experiment aiming to this study took place at GANIL-Caen with the beam produced by fragmentation with the LISE spectrometer. We performed systematic measurements in inverse kinematics, with a beam of 56Ni. The experiment included a complicated set-up, by using a variety of detectors in a wide range of angles and for different reaction analysis. Part of our data provides information for the study of neutron-proton pairing as well as the study of the N=28 shell closure. The analysis of the (d,t) implements the differential cross-section for transfer reaction to ground state and first excited state of 55Ni. The transfer reaction (d,4He) is of high interest in this work, being particularly suitable for this study since only the $\Delta T = 0$ transitions (transfer of a deuteron) is allowed and will shed light on neutron-proton pairing.

Auteur principal: Mlle GEORGIADOU, Anastasia (IPN)

Orateur: Mlle GEORGIADOU, Anastasia (IPN)

Classification de Session: Nuclear physics - experimental

ID de Contribution: **16** Type: **Poster**

Alpha clusterisation in Polonium 212

Describing nuclei with alpha particles had been very popular before these models were edged out by the shell model. But later some states in light isotopes like 16O and 20Ne have been described as “core + alpha”rotating systems, leading to a renewed interest in alpha clustering.

Recently this kind of structure has been also discovered in 212Po via the high probability of dipolar transition of several nuclear states. But opposite to all the light nuclei, the deformation due to an alpha particle is negligible in the “208Pb+alpha”system and so the motion of rotation is dramatically hindered. A totally new degree of freedom has been suggested to describe these states: a vibration of an alpha particle against a lead core.

I will present preliminary results on the transfer mechanism leading to the formation of theses cluster states and describe the experiments planned or already done to keep studying these promising states.

Auteur principal: M. DUPONT, Etienne (CSNSM)

Orateur: M. DUPONT, Etienne (CSNSM)

ID de Contribution: **17** Type: **Talk**

Learning of the importance map in a direct Monte Carlo shielding calculation with the particle transport code TRIPOLI-4(R)

mercredi 31 mai 2017 18:45 (15 minutes)

TRIPOLI-4® is a Monte Carlo code that simulates the transport of particles (Neutrons, Photons, Electrons) and provides reference solutions that are used to validate faster deterministic codes. In radiation shielding studies, engineers use Monte-Carlo codes to estimate radiation doses rate due to radioactive sources, given a description of the problem geometry. However, Monte Carlo methods may converge very slowly if the score of interest (i.e. the dose rate) is dominated by rare events.

Therefore, it is necessary to use variance reduction techniques to reduce the statistical uncertainty on the expected result. Most of these techniques require a prior knowledge of the problem in the form of a so-called importance map, which represents an estimate of the likelihood that a particle will contribute to the score as a function of its phase space coordinates. The map helps the code to choose which particles are likely to contribute to the score and therefore worth simulating. The aim of this work is to improve the figure of merit of a Monte Carlo run by learning from histories of events with Machine Learning algorithms.

Auteur principal: NOWAK, Michel (CEA)

Orateur: NOWAK, Michel (CEA)

Classification de Session: Nuclear energy

ID de Contribution: **18** Type: **Poster**

OPtimization analysis of PWR reactors in the framework of the introduction of renewable energies in the french energy mix

In the actual context of energetic transition, the increase of the intermittent renewable energies contribution (as wind farms or solar energy) is a major issue. On the one hand, the French government aims at increasing their part up to 30% by 2030, against 6% today. On the other hand, their intermittent production may lead to an important imbalance between production and consumption. Consequently, the other ways of production must adapt to those variations, especially nuclear energy which is the most important in France. The nuclear power plants (NPP) are already able to adjust their production in the so-called load-following mode. In this operating mode, the power plant is controlled using control rods (neutron absorber) or soluble boron. However, the control rods may introduce unacceptable spatial perturbations in the core, especially if the power variations are large and/or fast, and the use of the soluble boron produces waste effluents that need to be processed. The purpose of this work is to optimize the manageability of the power plants to cope with large power variations, and its final goal is to tune the control parameters in order to be able to make the load-following at a shorter time scale and larger power amplitude scale, or increase the safety margins to do so.

Auteur principal: M. MUNIGLIA, Mathieu (CEA)

Co-auteurs: Dr LE PALLEC, Jean-Charles (CEA); M. DO, Jean-Michel (CEA); Dr VÉREL, Sébastien (LISIC-ULCO)

Orateur: M. MUNIGLIA, Mathieu (CEA)

ID de Contribution: **19** Type: **Poster**

Manifestation of triaxiality in 135,136Nd: transverse wobbling and chirality

Transverse wobbling bands are expected to exist in 135Nd, with a configuration involving one νh11/2 hole coupled to a triaxial core, and also in 136Nd, with a configuration involving two πh11/2 particles. Multiple chiral bands are also expected to exist in 135Nd. Therefore, to prove the wobbling character of a band precise angular distribution and polarization measurements of the ΔI = 1 connecting transitions are needed. The JUROGAM II array composed of tapered and clover detectors organized on rings with high effi- ciency, is an ideal setup for measuring in the same experiment both the angular distribution and the polarization of the transitions of interest.

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ID de Contribution: **20** Type: **Poster**

New photoinjector design of the high charge S-band ThomX accelerator

We report the results of a recent beam dynamics study that has led to promising working points for the split ThomX photoinjector. ThomX is a back-scattering Thomson light source project that will use S-band electron Linac with tunable energy from 50 MeV to 70 MeV to produce high X-rays flux (10ˆ11 - 10ˆ13 ph/s) in the energy range from 45 keV to 90 keV. Since ThomX has been conceived to maximise the average X-rays flux in a fixed bandwidth, the high rate electron-photon collisions impose a linear accelerator combined with a storage ring. The high performances of the accelerator are largely affected by the high quality of the electron beam at the interaction point in the ring. Beam specifications at the interaction point should be achieved with 1 nC, 50 nA average current single bunch with normalised rms transverse emittance less than 5 mm-mrad and around 0.3% energy spread, at the end of the linac. The beam dynamics along the linac has been extensively studied to demonstrate the capability of the accelerator to meet the requirements for the high brightness electron beam using an RF photoinjector configuration.

Auteur principal: M. GAROLFI, Luca (Laboratoire de l'Accélérateur Linéaire (LAL))

Orateur: M. GAROLFI, Luca (Laboratoire de l'Accélérateur Linéaire (LAL))

ID de Contribution: **21** Type: **Talk**

Charmonium production in PbPb collisions at 5.02 TeV with CMS

mardi 30 mai 2017 10:30 (15 minutes)

Charmonium states, such as the J/ψ and ψ(2S) mesons, are excellent probes of the deconfined state of matter, the Quark-Gluon Plasma (QGP). The understanding of charmonia production in PbPb collisions requires the inclusion of many phenomena, such as dissociation in the QGP and statistical recombination, on top of cold nuclear matter effects. In this talk, final results on the relative J/ψ and ψ(2S) modification, based on the pp and PbPb data collected at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV by CMS in 2015, will be reported. The results are compared to those obtained at $\sqrt{s_{\mathrm{NN}}} = 2.76$ TeV over a similar kinematic range.

Auteur principal: M. STAHL, Andre Govinda (LLR)

Orateur: M. STAHL, Andre Govinda (LLR)

Classification de Session: Hadronic physics

ID de Contribution: **22** Type: **Poster**

PREPARATION OF CVD DIAMOND DETECTOR FOR FAST LUMINOSITY MONITORING OF SUPERKEKB

The SuperKEKB e + -e − collider aims to reach a very high luminosity of 8×10 35 cm −2 s −1 , using highly focused ultra-low emittance bunches colliding every 4ns. To meet the requirement of the dithering feedback system used to stabilise the horizontal orbit of the IP(Interaction Point), a relative precision of 10 −3 in 1ms is specified for the fast luminosity monitoring, which can be in principle achieved thanks to the large cross section of the radiative Bhabha process. This paper firstly presents the fraction of detected Bhabha scattering positrons with a new beam pipe coupled with a Tungsten radiator installed in LER; Then the characteristics of signals from sCVD diamond detector with thickness of 140μm coupled with a broadband current amplifier were studied based on tests with a Sr-90 source; Finally, simulated results for the reconstructed luminosity and the relative precision with different initial luminosities are also reported.

Auteur principal: PANG, Chengguo (0633782655)

Co-auteurs: Dr RIMBAULT, Cecile (LAL Orsay); Mlle EL KHECHEN, Dima (Laboratoire de l'Accélérateur Linéaire LAL); Dr BAMBADE, Philip (LAL); Dr KUBYTSKYI, Viacheslav (LAL); PEINAUD, Yann (CNRS/IN2P3/LAL); M. JEHANNO, didier (LAL)

Orateur: PANG, Chengguo (0633782655)

ID de Contribution: **23** Type: **Poster**

Development and optimization of mechanical polishing process for superconducting accelerating cavities

Accelerator performance, in particular the cavity quality factor and the accelerating gradient field, depends on the physical and chemical characteristics of the superconducting radio-frequency (SRF) cavity surface. The preparation of the cavity walls has been one of the major challenges in SRF accelerator technology. Even a single microscopic defect, in such large macroscopic structures, could be a cause of local breakdown (quench) and could severely decrease the performance of cavity. In order to avoid this negative impact on performance, more than 150µm of the material is typically removed to recover a clean and damage-free surface.
Buffered chemical polishing (BCP) and electropolishing (EP) has been effectively used in manufacturing of cavities during many years. But both methods are very hazardous and very expensive for treatment which required a large of volumes acids.
Recent studies have successfully proved that a mechanical polishing (MP) could effectively cure a cavity. But MP gives us the problem of contamination of samples by different chemical elements. The optimization of the experimental conditions in the MP and their influence on the Nb etching rate and surface properties was performed on a flat Nb samples. This work shows that pollution could be reduced. Upon determining optimal experimental conditions on flat samples, the procedures will be applied to elliptical cavity, pursuing improvement of their RF performance.

Auteur principal: M. HRYHORENKO, Oleksandr (IPNO)

Orateur: M. HRYHORENKO, Oleksandr (IPNO)

ID de Contribution: **24** Type: **Poster**

Improvement of cross section representation models for core calculations

In reactor analysis, deterministic calculations requires accurate nuclear cross section representation. Considering the thermal-hydraulic feedback and other dependencies at the core level allows for the simulation of normal and accidental conditions.
The goal of this PhD program is to elaborate a high accuracy model for future reactor simulations aiming to improve the required input (lattice calculation), storage and performance.

Multivariate approximation by local methods such as B-splines, coupled with a sparse grid techniques has proven to be a powerful strategy for responding to these demands. These libraries are currently under development in Python using embedded FORTRAN routines for the main tensorial manipulations.

Future work will be directed to optimize the amount of XS calculation and distribution in the phase space by means of machine learning methods.

Auteur principal: M. SZAMES, Esteban (CEA)

Orateur: M. SZAMES, Esteban (CEA)

ID de Contribution: **25** Type: **Talk**

First life time measurements in the ^{78}Ni region with AGATA and VAMOS at GANIL

mardi 30 mai 2017 18:05 (15 minutes)

Yrast (\textit{i.e.} the state with the lower energy for a given spin-partiy) and near-Yrast states were populated in the ^{78}Ni region by fusion-fission reaction ^{238}U(^{9}Be,Xγ) at GANIL. The prompt γ-rays were detected by the AGATA array\footnote{S. Akkoyun \textit{et al.}, \textit{AGATA - Advanced GAmma Tracking Array}, NIM A668 (2012) 26-58} and particle identification was achieved using the VAMOS++ spectrometer\footnote{M. Rejmund \textit{et al.}, \textit{Performance of the improved larger acceptance spectrometer : VAMOS++}, NIM A646 (2011) 184-191}. Life time measurements were performed using the Recoil Distance Doppler Shift technique developed at Cologne\footnote{J. Litzinger \textit{et al.}, \textit{Transition probabilities in neutron-rich ^{84,86}Se}, Phys. Rev. C 92, 064322 (2015)} with the Orsay plunger device OUPS\footnote{J. Ljungvall \textit{et al.}, \textit{The Orsay Universal Plunger System}, NIM A679 (2012) 61-66}.

The goal of the experiment was to populate Yrast states in N=51 neutron-rich odd-isotones from ^{89}Sr ($Z = 38$) down to ^{83}Ge ($Z = 32$) in order to study the high-ℓ single-particle states effective energy evolution above the $N = 50$ shell gap and complement the scarce direct nucleon exchange data presently available\footnote{J.S. Thomas \textit{et al.}, \textit{Single-neutron excitations in neutron-rich ^{83}Ge and ^{85}Se}, Phys. Rev. c 76, 044302 (2007)}. These reactions are indeed difficult to exploit with presently available post-accelerated radioactive ion beams (especially for high-ℓ orbitals) in this exotic region. More specifically, we have focused our attention on the $\nu 1g_{7/2}$ monopole drift which is key to understanding the possible evolution of the spin-orbit splitting due to the action of the proton-neutron interaction terms in the ^{78}Ni region. Our strategy was to measure low lying $7/2^+$ states life times as their relative change along the $N = 51$ line towards $Z = 28$ should reflect their possible $\nu 1g_{7/2}$ composition. The tensor mechanism\footnote{T. Otsuka \textit{et al.}, \textit{Evolution of nuclear shells due to the tensor force}, Phys. Rev. Lett. 95, 232502 (2005)} indeed predicts increasing low-lying $\nu 1g_{7/2}$ single particle components in the wavefunctions approaching ^{79}Ni.

In this talk, the particle identification and the life time measurement method will be presented with some examples.

Auteurs principaux: M. DELAFOSSE, Clément (IPNO); Dr VERNEY, David (Institut de Physique Nucléaire d'Orsay)

Orateur: M. DELAFOSSE, Clément (IPNO)

Classification de Session: Nuclear physics - experimental

ID de Contribution: **26** Type: **Talk**

Simultaneous measurement of the neutron-induced 233U capture and fission cross sections

mardi 30 mai 2017 17:05 (15 minutes)

233U plays the essential role of the fissile nucleus in the Th-U fuel cycle, which has been proposed as a safer and cleaner alternative to the U-Pu fuel cycle. A particularity of 233U is its small neutron capture cross-section which is about one order of magnitude lower than the fission cross-section on average. Therefore, the accuracy in the measurement of the 233U capture cross-section essentially relies on efficient capture-fission discrimination thus a combined setup of fission and γ-detectors is needed. A new measurement campaign of the 233U capture cross-section and alpha ratio has been proposed at the CERN n_TOF facility using the facility's Total Absorption Calorimeter (TAC) coupled with a compact fission detector. For this measurement, a novel cylindrical multi ionization cell chamber was developed in order to provide a compact solution for 14 active targets. Due to the high specific activity of 233U fast timing properties are required and achieved with the use of customized electronics and the very fast ionizing gas CF4. The measurement was recently successfully performed and is expected to provide the neutron-induced capture and fission cross sections for this important isotope, as well as very valuable information on the distribution of energies and multiplicities of the prompt γ-rays emitted after capture and fission reactions. The experimental setup, the n_TOF facility as well as preliminary results will be presented and discussed.

Auteur principal: M. BACAK, Michael (CEA Saclay, Irfu; CERN)

Orateur: M. BACAK, Michael (CEA Saclay, Irfu; CERN)

Classification de Session: Nuclear physics - experimental

ID de Contribution: **27** Type: **Poster**

Localization of bioactive metabolites in durable tropical tree Sextonia rubra (Lauraceae) with 2D and 3D TOF-SIMS imaging

Many tropical tree species generate natural decay resistance by producing bioactive metabolites. Among them, Sextonia rubra (Lauraceae) is a widely exploited species for construction in French Guiana. Rubrynolide and rubrenolide, which are secondary metabolites isolated from the stem wood of S. rubra, exhibit potent antifungal and termiticidal activities that result in the exceptional durability of the heartwood.
To study their cellular localization or biosynthesis process in living trees, 2D and 3D time-of-flight secondary ion mass spectrometry (TOF-SIMS) has been employed to map the wood surface from sapwood to heartwood at subcellular level.

Auteur principal: Mlle FU, Tingting (IPN)

Orateur: Mlle FU, Tingting (IPN)

ID de Contribution: **28** Type: **Talk**

Deeply Virtual Compton Scattering at Jefferson Laboratory

mardi 30 mai 2017 09:50 (15 minutes)

The internal structure of the nucleon - that is, what ordinary matter is made of and what the laws describing it are at their most fundamental level - is still not fully understood by modern nuclear physics. Form factors provide insight about parton positions while parton distribution functions give information about their momentum distribution inside the nucleon, but no correlations can be established between parton positions and momenta at this level.
Introduced in the mid 90's, Generalized Parton Distributions (GPDs) provide a higher level of information since they correlate longitudinal momentum and transverse position of partons inside the nucleon. GPDs give a three-dimensional description of the internal structure of the nucleon, as well as insights on the nucleon spin structure.
It has been established that GPDs are experimentally accessible through Deeply Virtual Compton Scattering (DVCS) and its interference with the Bethe-Heitler process. A worldwide experimental program was started in the early 2000's, and more specifically, a DVCS experiment studying the process ep -> epγ was performed at Jefferson Laboratory, Hall A (Virginia, USA) between 2014 and 2016.
The analysis of the data taken during this latest DVCS experiment will allow us to extract the DVCS helicity-dependent cross sections as a function of the momentum transfer: Q^2. These cross sections will then allow us to access the GPDs of interest and get insights on their dependence in Q^2, and thus, improve our understanding of the internal structure of the nucleon.
This talk is going to focus on the ongoing analysis of these data.

Auteur principal: M. GEORGES, Frederic (IPN)

Orateur: M. GEORGES, Frederic (IPN)

Classification de Session: Hadronic physics

ID de Contribution: **29** Type: **Talk**

Polynomial Axial Expansion for 3D method of characteristics applied to neutron transport

mercredi 31 mai 2017 18:25 (15 minutes)

In the recent years a solver based on the Method of Characteristics (MOC) allowing the treatment of
3D extruded geometries has been developed inside the TDT module of APOLLO3®. The standard Step Characteristics (SC) approximation is used and results show an excellent agreement with Monte-Carlo simulations. However a fine mesh refinement is needed to converge the strong flux gradients customarily appearing in 3D reactor physics applications. An improvement of this method is proposed: the results of the previous work show that much of the flux variations are likely to be represented by a polynomial basis along the vertical direction. Since most of the geometrical and physical heterogeneities are radially located, the SC approach is preserved to represent the solution over the radial plane. As a matter of fact the strong irregularities in the geometrical meshes prevent from an efficient use of a polynomial expansion. On the contrary along the axial direction the computational meshes assume a Cartesian shape, well suited for a polynomial representation of sources and fluxes. A convenient polynomial development in this direction allows us to approximate the strong flux slopes without the help of a large number of axial meshes.

Auteur principal: M. GRAZIANO, Laurent (CEA)

Co-auteurs: M. SCIANNANDRONE, Daniele (CEA); M. SANTANDREA, Simone (CEA)

Orateur: M. GRAZIANO, Laurent (CEA)

Classification de Session: Nuclear energy

ID de Contribution: **30** Type: **Talk**

Search for heavy neutrinos with the T2K experiment

mercredi 31 mai 2017 12:00 (15 minutes)

In the Standard Model of particle physics, neutrinos are massless. But, from neutrino oscillations experiments, we know that they are massive. The question is: how do they acquire these non-zero masses ?

One of the possible explanations introduces new heavy neutrinos states, with a mass of few keV to GUT scale, that would mix with light neutrinos. Not only would they explain neutrino masses but they could also give answers to other enigmas, such as the dark matter composition and the matter-antimatter asymmetry in the Universe. Using T2K experiment, a neutrino oscillation experiment located in Japan, it is possible to search for such particles (at 100 MeV-scale) that would be produced along the standard neutrino beam and then decay in the T2K near detector.

After introducing the theoretical framework, the presentation will focus on the studies of expected signal and background in the near detector in various decay modes, used to put constraints on heavy neutrinos mixing with standard neutrinos.

Auteur principal: M. LAMOUREUX, Mathieu (CEA Saclay, IRFU)

Orateur: M. LAMOUREUX, Mathieu (CEA Saclay, IRFU)

Classification de Session: Neutrinos

ID de Contribution: **31** Type: **Poster**

Low Energy Bunch Compression With Dogleg Chicane

The ESCULAP project joins the photo injector PHIL with the High Power Laser LASERIX to perform a laser plasma wakefield acceleration (LPA) experiment. A prerequisite is that the electron beam (10pC,10MeV) has to be compressed longitudinally before being injected in the plasma cell from 2000fs (RMS) to less than 300fs (and later 100fs). To achieve such compression we present a solution based on a dogleg chicane. The design of this chicane uses the simulation codes ASTRA and ELEGANT. Effects such as longitudinal space charge and coherent synchrotron radiation are taken into account. We show that when achieving this compression, the emittance in the x direction grows from 0.4mm.mrad to 0.84mm.mrad due to higher order chromacity.

Auteurs principaux: Dr BRUNI, Christelle (LAL); M. WANG, Ke (LAL, Universite Paris Sud); Dr DELERUE, Nicolas (LAL); Dr PRAZERES, Rui (universite Paris sud)

Orateur: M. WANG, Ke (LAL, Universite Paris Sud)

ID de Contribution: **32** Type: **Poster**

WA105: A prototype of Long Baseline Neutrino Detector

Neutrino oscillations allow for CP violation in the leptonic sector thanks to the presence of a phase in the PMNS matrix. Still unmeasured today, this phase could explain why there is something instead of nothing in our universe.
The DUNE experiment in the US, set to start around 2026, is designed to measure this phase. A first prototype of Double Phase Liquid Argon TPC is being built at CERN to test the technology that might be used in DUNE to detect (anti)neutrinos.

Auteur principal: M. COTTE, philippe (CEA Saclay)

Orateur: M. COTTE, philippe (CEA Saclay)

ID de Contribution: **33** Type: **Talk**

Generalized Parton Distributions and their covariant extension

mardi 30 mai 2017 10:10 (15 minutes)

The internal structure of hadrons (which are bound-states of quarks and gluons, such as the proton or pion) is difficult to map due to the non-perturbative QCD regime in which the constituents interact. Decades of experiments in the field have allowed us to learn a lot about the distribution of momentum (through what is called parton distribution functions, PDFs) or transverse plane position (through Form Factors). We can generalize these two concepts into Generalized Parton Distributions (GPDs), which encode the correlations between longitudinal momentum and transverse position of partons.

The goal of this work is to model nucleon GPDs ab initio. We can mention for example the Dyson-Schwinger framework, one of such possibilities for calculations as close as possible to QCD. The path to GPDs can then go through Light-cone wave-functions, which allow to fulfil one important property of GPDs, called positivity. The issue is that the information is often limited in terms of physical region. But, taking advantage of another property of GPDs, called polynomiality, related to Lorentz invariance of the theory, we can extend the GPD to the complete domain. This is done through the inversion of a Radon transform (which is a mathematical tool often used in computerized tomography). This is the first systematic procedure yielding consistent GPD models fulfilling a priori all theoretical constrains.

Auteur principal: M. CHOUIKA, Nabil (Irfu/SPhN - CEA Saclay)

Orateur: M. CHOUIKA, Nabil (Irfu/SPhN - CEA Saclay)

Classification de Session: Hadronic physics

ID de Contribution: **35** Type: **Talk**

An innovative Neganov-Luke-assisted light detector for the sensitivity enhancement of CUORE experiment

mercredi 31 mai 2017 12:40 (15 minutes)

The neutrinoless double-beta decay (0ν-DBD) is a hypothetical rare nuclear transition producing only two electrons in the final state. Its discovery would have important consequences, demonstrating the Majorana nature of neutrino, allowing the measurement of its absolute mass scale and proving the non-conservation of the lepton number. Nowadays CUORE - with its 988 TeO_2-based bolometers searching for 0ν-DBD of ^{130}Te at 2527 keV - is one of the most sensitive experiment, but it is not a background free experiment because of α particles with degraded energy emitted by surface contamination. A promising solution to this problem is the detection of the around 100 eV of Cherenkov light produced by the 0ν-DBD events. We have recently proved that our Neganov-Luke-assisted light detector can measure this tiny signal thanks to the amplification of thermal signals by a superimposed electric field. We tested the performances of this device coupled to a CUORE bolometer in the Laboratoire Souterrain de Modane (FR): we obtained a signal amplification of 12.7, improving the signal to noise ratio by a factor 7.1 and reducing the baseline noise from 108 eV to 9.9 eV. The events in the β/γ region were identified with a 95% acceptance with a rejection factor of 99.95% for α particles.

Auteur principal: Mlle NOVATI, Valentina (CNRS-CSNSM)

Orateur: Mlle NOVATI, Valentina (CNRS-CSNSM)

Classification de Session: Neutrinos

ID de Contribution: **38** Type: **Talk**

MAPSSIC: a novel CMOS intra-cerebral beta+ probe for deep brain imaging in awake and freely moving rat

mardi 30 mai 2017 13:00 (15 minutes)

Preclinical behavior neuroimaging gathers simultaneous assessment of behavior and functional brain imaging.
This complementarity is seen as a critical step for comparing animal to human behavior and consequently assess the validity of preclinical studies in drug development.
Achieving such a combination is difficult, anaesthesia or restraints inherent to micro-PET imaging precludes its use for behavior studies.

In that context, we have presented an original strategy using submillimetric pixelated probes to directly measures positrons inside the rat brain.
The small positrons detection volume around the sensor is comparable with rat brain loci sizes ; integrated electronics and wireless communication system allows fully freely-moving rats experiments.
Former intracerebral probes have shown promising results but have suffered from various detection limitations.
This talk will present MAPSSIC, a novel β^+ probe benefiting from innovative CMOS MAPS sensors to overcome these limitations.

Auteur principal: M. AMMOUR, Luis (Université Paris-Sud - IMNC)

Co-auteurs: Dr VERDIER, Marc-Antoine (IMNC); Dr LANIECE, philippe (UMR8165 IMNC)

Orateur: M. AMMOUR, Luis (Université Paris-Sud - IMNC)

Classification de Session: Medical imaging

ID de Contribution: **39** Type: **Poster**

Determination of the neutrino mass hierarchy with JUNO experiment

The Nobel Price in Physics 2015 was awarded to Takaaki Kajita and Arthur McDonald for “the discovery of neutrino oscillation, which shows that neutrinos have mass”. However, the neutrino mass hierarchy of three mass eigenstates (ν_1, ν_2, ν_3) remains unknown. The information of this mass hierarchy is believed to be accessible by measuring precisely the flavour oscillation of reactor anti-neutrinos, which requires a neutrino detector with extremely high energy resolution.

JUNO (Jiangmen underground neutrino observatory) is one of the most promising experiments specialising in the determination of the neutrino mass hierarchy. JUNO is located 53 km away from both Yangjiang and Taishan nuclear power plants in Guangdong, China, itself is composed of a water pool for muon veto and a central detector which is an acrylic sphere of 35m in diameter containing 20 000 tons of liquid scintillator, the optical coverage of the central detector will achieve 75% of its surface by using ˜17k 20-inch Photomultiplier Tubes(PMT). A second set of ˜36k 3-inch PMTs will be installed as well, thus we are capable to combine information from two independent readout systems. This unprecedented design allows us to measure the neutrino energy with a resolution expected to be 3%.

In my poster, more details of the JUNO design and in particular, its multi-calorimeter system will be shown and explained more precisely.

Auteur principal: M. HUANG, QINHUA (LLR-JUNO)

Orateur: M. HUANG, QINHUA (LLR-JUNO)

ID de Contribution: **40** Type: **Poster**

Space-charge compensation in low energy beam transport lines

The study of the dynamics of low energy beam transport line (LEBT) is one of the major challenges in the high intensity hadron accelerators field.
At low energy, this dynamics is dominated by the charge space field which in many cases is non-linear and can induce a halo formation, emittance growth and beam losses along the accelerator.
However, a low energy ion beam induces ionization of the residual gas in a LEBT. Secondaries particles (ions and electrons) from the ionization are repelled or confined radially by the space charge field according to their charge sign.
The progressive accumulation of these secondaries particles contributes to the space charge field compensation.
In order to have a better understanding of this phenomenon, some simulations using « warp » code have been realized.
These results will be discussed with experimental results obtained on the LEBT of MYRRHA and IFMIF projects.

Auteur principal: M. GÉRARDIN, Frédéric (CEA/Irfu/SACM)

Orateur: M. GÉRARDIN, Frédéric (CEA/Irfu/SACM)

ID de Contribution: **41** Type: **Poster**

Complexation of actinides with organic ligands occurring in the environment: thermodynamic, structural and kinetic study

The application of nuclear technology in industry, research and medicine leads to the production of radionuclides that are likely to result in soil pollution especially with actinides, in the vicinity of uranium mining sites, radwaste disposal facilities, or after accidental spreading. The presence of organic molecules in the environment may favour the mobility of the radioelements up to the food chain. For evident safety reasons, the migration behaviour of these radiotoxic species must be predicted. Among organics that exhibit a strong affinity for hard cations like lanthanides and actinides ions, siderophores, compounds excreted by microorganisms, as well as polyaminocarboxylic acids can affect the chemical behaviour of actinides. According to the principle of Hard and Soft Acids and Basis, these chelating agents that possess hard donor atoms bind strongly to felement ions. Some have already been used in the frame of advanced separation technologies for reprocessing of spent nuclear fuel.
The proposed work is focused on the interaction of selected actinide and lanthanide ions, on one hand with a group of siderophores: the hydroxamates (RC(=O)NHOH), and on the other hand, with simple polyaminopolycarboxylic acids that can be regarded as a simplistic model of organic matter.

Auteurs principaux: Mme LE NAOUR, Claire (IPNO); M. HE, Mingjian (IPNO); Dr SLADKOV, Vladimir (IPNO)

Orateur: M. HE, Mingjian (IPNO)

ID de Contribution: **42** Type: **Poster**

Development of a portable gamma imaging system for absorbed radiation dose control in targeted radionuclide therapy

Targeted radionuclide therapy is still a developing area among the different treatment modalities against cancer but is one of the most used in the treatment of malign and benign diseases of thyroid. The large heterogeneity of absorbed doses in patients and the range of effects observed, both in terms of toxicity and response, demonstrate that an individualized dosimetry is essential for optimizing this therapy [1]. In clinical practice, patient-specific dosimetry relies on the quantification of radiopharmaceutical uptake as a function of time, which is obtained both from pre-therapy tracer studies and measurements made with a counting probe during treatment [2]. However, the best way to reach a real dose quantification, especially free of the influence of the stunning effect [3], would be to perform imaging during treatment. Conventional gamma cameras are not suited for this kind of applications both in terms of performances (very high activity, high energy), ergonomics (use in the isolation room of the patient) and availability, that should be compatible with an accurate temporal sampling of the kinetics of the tracer. The aim of the project is to strengthen the control of the dosed delivered to organs during targeted radionuclide therapy of thyroid, developing a novel mobile gamma imaging device specifically dedicated to semi-quantitative measurements of the bio-distribution and kinetics of the radio-tracer for both benign and malign thyroid disease. The device will be op- timized, in terms of energy and spatial responses, to meet the specific needs of absorbed radiation dose control during thyroid therapy and its ergonomics will be suited for using it at the patients bedside. The final purpose is to develop a 10x10 cm2 field of view camera suited to the size of the thyroid. The camera will consist of a parallel-hole high- energy tungsten collimator, made with 3D printing, coupled to a continuous inorganic scintillator, readout by a recent and well-suited technology based on arrays of Silicon Photomul- tiplier (SiPMs) detectors [4]. We report here the preliminary study aiming to optimize the detection head of the camera, by using both experimental data and theoretical approaches. Experimental characterizations is focused on the choice of the best scintillator-photodetector assembly, in terms of spatial and energy performances. The theoretical studies rely both on the design of the collimator with analytical models,and on the optimization of the overall camera, with Monte Carlo simulations, for the dosimetry of thyroid diseases.

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Associated Equipment 787 (2015): 367-372.

Auteur principal: Mlle TRIGILA, Carlotta (IMNC CNRS/IN2P3, Univ. Paris Sud et Paris Diderot, Orsay, France.)

Orateur: Mlle TRIGILA, Carlotta (IMNC CNRS/IN2P3, Univ. Paris Sud et Paris Diderot, Orsay,

France.)

ID de Contribution: **43** Type: **Talk**

Nuclear structure calculations: mean-field and beyond

mardi 30 mai 2017 11:40 (15 minutes)

Atomic nucleus is a quantum many-body system whose properties are determined by a number of nucleons and the interaction between them. The comprehensive theoretical framework for the description of nuclear systems should therefore be able to account for more than 3000 observed and thousands still unobserved nuclei, including their ground-state, excited-state and reaction properties. It turns out to be as complicated as it sounds. However, not everything is hopeless and significant progress has been made over the last decades. In this talk I will introduce you to basic features of one of the most successful frameworks on the market, the nuclear energy density functional theory. It is essentially a two-step process: starting from the mean-field calculation (step one), we employ the generator coordinate method (step two) in order to calculate collective properties of atomic nuclei that can then be compared to the experiment. The performance of our model will be tested in a study of neon isotopic chain structure, whose clustering properties have recently attracted both experimental and theoretical interest.

Auteur principal: M. MAREVIC, Petar (IPNO/CEA)

Orateur: M. MAREVIC, Petar (IPNO/CEA)

Classification de Session: Nuclear physics - theory

ID de Contribution: **44** Type: **Poster**

Frequency dependent squeezing

The first gravitational waves signal was detected on the 14th september 2015 by the LIGO observatories. This first detection marked the beginning of a new kind of astronomy : gravitational waves astronomy. With this in prospect, it is important to enhance the sensitivity of gravitational waves detectors. Frequency dependent squeezing is a promising improvement which uses the rules of quantum optics to go beyond the standard quantum limit of gravitational waves detector sensitivity. I will present this technique within the framework of an experimental prototype using the CALVA 50 meters cavity at LAL to test its implementation in a detector such as Advanced Virgo.

Auteur principal: Mlle VOLLARD, Angelique (LAL / CNRS)

Orateur: Mlle VOLLARD, Angelique (LAL / CNRS)

ID de Contribution: **45** Type: **Poster**

The CMS Level-1 Vector Boson Fusion trigger for the LHC Run II

The CMS experiment implements a sophisticated two-level triggering system composed of Level-1, instrumented by custom-design hardware boards, and a software High-Level-Trigger. A new Level-1 trigger architecture with improved performance is now being used to maintain the thresholds that were used in LHC Run I for the more challenging luminosity conditions experienced during Run II. The implementation of the first dedicated Vector Boson Fusion trigger algorithm will be described, along with its performance on benchmark physics signals.

Auteur principal: Mme AMENDOLA, Chiara (Laboratoire Leprince-Ringuet, Ecole polytechnique)

Orateur: Mme AMENDOLA, Chiara (Laboratoire Leprince-Ringuet, Ecole polytechnique)

ID de Contribution: **46** Type: **Talk**

Allsky search for long duration gravitational waves detection

mercredi 31 mai 2017 10:30 (15 minutes)

From September 2015 to January 2016, Advanced LIGO conducted its first observation run (O1) with a sensitivity more than three times better than the initial detectors'. We describe a search for long duration gravitational wave transients in the O1 data. This complements the all-sky unmodelled transient search by looking for gravitational waves of durations of many hundreds of seconds. The search pipeline coherently combines data from all detectors and reconstructs the signal energy using seed based clustering methods without assumption on the signal waveform. We present the status of the search and its performance.

Auteur principal: M. FREY, Valentin (LAL)

Orateur: M. FREY, Valentin (LAL)

Classification de Session: Astrophysics and cosmology

ID de Contribution: **47** Type: **Poster**

Atomic Mass Evaluation 2016

The atomic mass is a key for a better understanding of nuclear structure and nucleosynthesis process within stars. The atomic mass table is widely used in almost all domains of physics, especially in nuclear physics and astrophysics, and they are regarded as the most comprehensive and reliable source of atomic masses.The newest atomic mass table, AME2016, has been published recently[1,2]. Some new features and developments in AME2016 will be mentioned, and some of the most precise mass-spectrometric results will be discussed.

[1] W.J. Huang, G. Audi, Meng Wang, F.G. Kondev, S. Naimi and Xing Xu, The AME2016 atomic mass evaluation (I). Evaluation of input data; and adjustment procedures. Chinese Physics C, 41(2017)030002.

[2] Meng Wang, G. Audi, F.G. Kondev, W.J. Huang, S. Naimi and Xing Xu, The AME2016 atomic mass evaluation (II). Tables, graphs and references, Chinese Physics C, 41(2017)030003

Auteur principal: M. HUANG, Wenjia (CSNSM (IN2P3-CNRS & UPS))

Co-auteurs: Dr KONDEV, Filip. G (Argonne National Laboratory, Argonne, IL 60439, USA); Dr AUDI, Georges (CSNSM, CNRS/IN2P3, Université Paris-Saclay, Orsay 91405, France); Dr WANG, Meng (Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou 730000, People's Republic of China); Dr NAIMI, Sarah (RIKEN Nishina Center, Wako, Saitama 351-0198, Japan); Dr XU, Xing (Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou 730000, People's Republic of China)

Orateur: M. HUANG, Wenjia (CSNSM (IN2P3-CNRS & UPS))

ID de Contribution: **48** Type: **Talk**

Searches for dark matter particles produced in VBF processes in pp collisions at sqrt(s)=13 TeV with the ATLAS detector

mercredi 31 mai 2017 09:30 (15 minutes)

Dark Matter constitutes 80% of the matter in the universe, as confirmed by astrophysical and cosmological observations, but it has never been detected directly.
An important role in the search for the dark matter particles is played by the LHC.
In particular, scenarios where the dark matter has a coupling to the Higgs boson can be tested at the LHC by searching for the invisible decay of the 125 GeV Higgs Boson.
I will present the ATLAS search for the invisible decay of the Higgs boson produced via the vector boson fusion (VBF) mechanism. I will explain the strategy of the analysis, its main features and challenges.
I will show that the same topology of events selected within this analysis can be used to test other dark matter models, such as minimal dark matter models.

Auteur principal: PEREGO, Marta Maria (CEA Saclay)

Orateur: PEREGO, Marta Maria (CEA Saclay)

Classification de Session: Particle physics

ID de Contribution: **50** Type: **Talk**

CUPID-Mo: A Double beta decay experiment with Li₂¹⁰⁰MoO₄ scintillating bolometers

mercredi 31 mai 2017 13:00 (15 minutes)

nbsp; nbsp; nbsp; nbsp; Neutrinoless double beta decay is a hypothetical rare nuclear transition, whose observation can give us information about the neutrino absolute mass scale and hierarchy. The existence of this process will prove that lepton number conservation can be violated and consequently the Standard Model should be extended.

nbsp; nbsp; nbsp; nbsp; The subject of my PhD thesis is focused on the search for this decay in the isotope ¹⁰⁰Mo. My main activity aims at the preparation and operation of an underground bolometric pilot experiment named CUPID-Mo, which adopts the technology developed within the project LUMINEU. This approach foresees the use of cryogenic scintillating bolometers as detectors to search for double beta decay. They are made of scintillating crystals of Li2100MoO4 coupled to NTD Ge thermistors and light detectors, and work in the range 10-20 mK.

nbsp; nbsp; nbsp; nbsp; RD tests of enriched Li₂¹⁰⁰MoO₄ crystals were performed at the Underground Laboratory of Modane (LSM) during several runs, showing excellent results in terms of radiopurity and performance. The outcome of the RD allowed us to move to the next stage of the experiment, named CUPID-Mo demonstrator. This experiment will be performed in LSM before the end of 2017 with 20 enriched Li₂¹⁰⁰MoO₄ crystals, with the goal to achieve a background of 10⁻³ counts/keV/kg/y in the ROI and to prove that this technology meets the CUPID (CUORE Upgrade with Particle Identification) requirements for a ton-scale experiment.

Auteur principal: Mlle ZOLOTAROVA, Anastasiia (CEA/IRFU/SPP)

Orateur: Mlle ZOLOTAROVA, Anastasiia (CEA/IRFU/SPP)

Classification de Session: Neutrinos

ID de Contribution: **51** Type: **Talk**

The STEREO experiment, a search for sterile neutrino at ILL

mercredi 31 mai 2017 12:20 (15 minutes)

Neutrinos - abundant but elusive particles - appear to be good candidates to look for physics beyond the Standard Model. Although our current understanding succeeds to compile most of the data into a three neutrino mixing framework, there are still experimental anomalies that need to be explained, such as the Reactor Antineutrino Anomaly (2011). The latter can be solved by introducing a light sterile neutrino into which neutrinos would oscillate. The Stereo experiment is designed to test this hypothesis, by placing a neutrino target at a 9 meters distance from the ILL research reactor core, in Grenoble, source of electronic antineutrinos. An oscillation pattern - if any - will be measured both in energy and in distance thanks to a segmented detector. After an introduction to neutrino physics, I will expose the principle of the Stereo experiment, as well as the status of the ongoing analysis of first collected data.

Auteur principal: BONHOMME, Aurélie (CEA)

Orateur: BONHOMME, Aurélie (CEA)

Classification de Session: Neutrinos

ID de Contribution: **52** Type: **Talk**

Interfacing Many-Body methods and EFT interactions

mardi 30 mai 2017 12:00 (15 minutes)

Through the study of neutron matter, we emphasis the importance of adapting the many-body techniques to the way the nuclear interaction derived from an Effective Field Theory have been renormalized.

Auteur principal: M. DRISSI, Mehdi (CEA/SPhN)

Orateur: M. DRISSI, Mehdi (CEA/SPhN)

Classification de Session: Nuclear physics - theory

ID de Contribution: **53** Type: **Poster**

2+1 Heavy Quark QCD Phase Transitions in Massive Landau-DeWitt Gauge

We study the QCD phase diagram for 2+1 heavy quarks in the presence of an effective gluon mass term arising from the Gribov copy problem in standard Faddeev-Popov gauge fixing procedures. We compute both the Polyakov loop, which is an order parameter for the confinement/deconfinement transition, as well as an effective background gauge field potential to two loop order in Perturbation Theory. We then present our results for zero, non-zero and imaginary chemical potential and compare them both to a previous 2 loop pure YM study as well as lattice findings.

Auteur principal: M. MAELGER, Jan (CPhT)

Orateur: M. MAELGER, Jan (CPhT)

ID de Contribution: **54** Type: **Poster**

Search for the SM (and BSM) production of four top quarks in the ATLAS detector at the LHC

The top quark is the heaviest elementary particle we know. Therefore, it plays a very special role in the Standard Model of particle physics (SM). Its Yukawa coupling to the Higgs boson is close to one, which makes this particle a key element of many Beyond the Standard Model (BSM) theories.

The LHC, located at CERN (Geneva, Switzerland) is a proton - proton collider with a center-of-mass energy of 13 TeV since 2015. The LHC runs at the highest energy and luminosity ever reached by an accelerator. It is then able to study very rare collision scenarios, or "events", such as four top production: $t\bar{t}t\bar{t}$.

This reaction $pp \to t\bar{t}t\bar{t}$ is extremely rare, and has a theoretical cross-section of 9.2 fb, so we expect to produce only ~ 1000 such events in the LHC by 2018, compared to the 40 million events per second!

Therefore, the analysis performed to study these events selects only events with two leptons of the same charge, to reject most of the background events coming from $t\bar{t}$ events.

Auteur principal: M. CHEVALÉRIAS, Thibault (CEA Saclay)

Orateur: M. CHEVALÉRIAS, Thibault (CEA Saclay)

ID de Contribution: **55** Type: **Poster**

Characterization of the planar pixel modules of the active and slim edge design for ATLAS Inner Detector Upgrade

In the frame of the second phase of LHC (CERN) accelerator complex upgrade, during the long shutdown in ˜ 2023, it's planned to increase the beam luminosity up to $5 \times 10^{34} cm^{-2} s^{-1}$ and collision energy up to 14 TeV in the center of mass to achieve the high-precision results in the project tasks. These conditions will lead to additional demands especially on an inner part of the ATLAS detector system. The resulting increase in occupancy levels and integrated radiation doses go beyond the design values for the current tracker. Due to this fact the replacement of the ATLAS tracker system is foreseen with using of advanced sensor and readout electronics technologies.
This work is dedicated to the characterization of the new n-in-p sensor (active edge and slim edge) designs, which are the promising candidates for the ATLAS pixel detector upgrade to be operated at the HL-LHC, thanks to their radiation hardness, cost-effectiveness, increased active area fraction and low material budget. The results on a test beam characterization of the samples of these designs are presented and discussed in the present work.

Auteur principal: M. HOHOV, Dmytro (LAL Université Paris-Sud)

Co-auteurs: Dr LOUNIS, ABDENOUR (LAL-CNRS); Mme RASHID, Tasneem (LAL)

Orateur: M. HOHOV, Dmytro (LAL Université Paris-Sud)

ID de Contribution: **56** Type: **Talk**

First measurement of the growth rate of structures with the SDSS-IV eBOSS DR14 quasar sample at z˜1.5

mercredi 31 mai 2017 11:10 (15 minutes)

One of the biggest questions of contemporary cosmology is the origin of cosmic acceleration : does it arise from a constant vacuum energy as assumed in ΛCDM or from another form of dark energy that varies in time and space, or from a breakdown of general relativy on cosmological scales? To distinguish between these possibilities, one promising technique is to measure the growth rate of structures in data and to compare it with the prediction from general relativity.

The eBOSS multi-object spectrograph has undertaken a survey of quasars in the almost unexplored redshift range $0.8 < z < 2.2$. In this talk, I will present the first measurement of the growth rate of structures from the 2-point correlation function of the spectroscopically confirmed eBOSS DR14 quasars which correspond to 2 years of data taking. I will present the applicability of the model we are using to fit the correlation function of quasars at this redshift and the systematics tests we performed using simulated populations of quasars as benchmark for the analysis.

Auteur principal: Mme ZARROUK, Pauline (CEA-Saclay)

Orateur: Mme ZARROUK, Pauline (CEA-Saclay)

Classification de Session: Astrophysics and cosmology

ID de Contribution: **57** Type: **Talk**

The Cosmic Microwave Background

mercredi 31 mai 2017 10:50 (15 minutes)

Physical Cosmology, as it is today understood, began with the development in 1915 of Albert Einstein's general theory of relativity, followed by major observational discoveries in the 1920s. One of the major theories that emerged was that of the Big-Bang. With it follows many predictions of behaviour and properties of our Univers. What is it size? its content? its age? Those are few of the many questions Cosmology tries to answer. Many of them can be solved when observing the so-called Cosmic Microwave Background (CMB), one of the oldest relic of the early univers era.

For a few decades now, the Cosmic Microwave Background is one of the most sought probes of the Big-Bang. Since its first evidence in 1964, measurements have drastically being improved. Today, many conclusions were drawn, and many more still need to be.

Auteur principal: M. VANNESTE, Sylvain (Laboratoire de l'accélérateur Linéaire, groupe Cosmologie)

Orateur: M. VANNESTE, Sylvain (Laboratoire de l'accélérateur Linéaire, groupe Cosmologie)

Classification de Session: Astrophysics and cosmology

ID de Contribution: **58** Type: **Talk**

Recent developments in Bogoliubov Many-Body Perturbation Theory

mardi 30 mai 2017 12:20 (15 minutes)

In the recent years, so-called *ab initio* methods have know a resurgence of interest among the nuclear theory community. Recent investigations [Tichai et al., 2016] have shown that Many-Body Perturbation Theory (MBPT), when using Hamiltonians evolved through the Similarity Renormalization Group method, could provide results competing with more demanding techniques like Self-Consistent Green's Functions or Coupled-Cluster.

Recent efforts have been made to extend this formalism to Bogoliubov reference state that break the symmetry associated with the number of particle [Duguet and Signoracci, 2017]. We will here present extension of the BMBPT formalism to higher orders as well as first numerical results.

Auteur principal: M. ARTHUIS, Pierre (CEA/DRF/IRFU/SPhN)

Orateur: M. ARTHUIS, Pierre (CEA/DRF/IRFU/SPhN)

Classification de Session: Nuclear physics - theory

ID de Contribution: **59** Type: **Talk**

Study of the electron transport for the FEL beam line COXINEL experiment using a beam produced by plasma laser acceleration.

mercredi 31 mai 2017 17:25 (15 minutes)

The COXINEL experiment aims to demonstrate the free electron laser amplification with an electron beam produced by laser plasma acceleration.
For this, a transport line was designed and prepared at the Synchrotron SOLEIL. It consists of three permanent magnet quadrupoles with variable gradient (QUAPEVAs), a demixing chicane, a second set of electromagnetic quadrupoles and a 2 m undulator. This line was installed at the LOA.
The laser plasma acceleration regime, carried out in an injection by ionization in a gas jet, was initially chosen to commission the transport line.
The electron beams produced in this regime are stable, have a wide energy spectrum (50-250 MeV) and a wide divergence (several mrad depending on their energy), the properties of the beam have been controlled and manipulated using different optics along the transport line. The beam was characterized every 1-2 m.
We present here the measurements carried out on the COXINEL line with the first observation of the radiation of the undulator at 200 nm. These results are compared with numerical simulations, using a homemade tracking code.

Auteur principal: M. ANDRE, Thomas (Synchrotron SOLEIL)

Orateur: M. ANDRE, Thomas (Synchrotron SOLEIL)

Classification de Session: Accelerators

ID de Contribution: **60** Type: **Talk**

Study on X-ray diagnosis for phase distribution during corium-sodium interaction

mercredi 31 mai 2017 17:45 (15 minutes)

In case of a severe accident scenario in sodium-cooled fast reactors, the fuel in the core would melt, generating a hot mixture termed as corium. This corium will then be discharged into the sodium pool through the guide tubes. When the hot molten corium comes in contact with sodium, called Molten Fuel-Coolant Interaction (MFCI), it might generate a violent explosion. Such an explosion can be visualized using an X-ray radioscopic device. The PhD thesis aims to study the X-ray diagnosis and develop an X-ray imaging algorithm in order to better realize the interaction mechanism. This study will help us to analyze the three phase repartition (i.e. corium, liquid sodium and its vapors) during such an interaction being carried out in the upcoming experimental facility PLINIUS 2 at CEA, Cadarache. A major difficulty is to detect the extreme fine fragments of corium (˜100 microns) in sodium which is beyond the detection limit of existing tools. This talk will focus on the development of initial models of the representative corium fragments and the associated image processing and analysis techniques, to better realize the interaction mechanism.

Auteur principal: Mlle SINGH, Shifali (CEA, Cadarache)

Orateur: Mlle SINGH, Shifali (CEA, Cadarache)

Classification de Session: Nuclear energy

ID de Contribution: **61** Type: **Talk**

Gamma-ray cascade study in Kr and Ba fission fragments with the EXILL experiment

mardi 30 mai 2017 16:45 (15 minutes)

The poor accuracy of microscopic models in the prediction of fission observables constrains nuclear industry to rely on semi-empirical models, which in turns need systematic and accurate experimental data on a significant number of observables. In the last decade, large efforts were made in the fission community to improve models of the fission process and of the de-excitation of fission fragments. This is performed through reliable Monte Carlo simulations that take into account prompt neutrons and gamma-ray emission. An ultimate aim of such a simulation is to predict e.g. gamma-heating effect in nuclear reactor. The FIFRELIN code developed by CEA Cadarache is able to estimate the intensities of gamma-ray transitions in all the fission fragments.

In the EXILL experiment conducted in 2012 and 2013 at ILL, a target made of 235U (and also 241Pu, which was not investigated in this work) was surrounded by an array of high-resolution, germanium gamma-ray detectors and irradiated by an intense cold neutrons beam. We have extracted the intensities of the main discrete gamma-ray transitions in a set of fission fragments, using the triple gamma-ray coincidence technique, and we have compared our results to FIFRELIN outputs. The result of our study on the gamma-ray cascades in Kr and Ba fragment pairs will be presented.

Auteur principal: M. RAPALA, Michal (CEA Saclay/IRFU/DPhN/LERN)

Co-auteurs: LETOURNEAU, Alain (CEA, DRF, IRFU, Université Paris-Saclay, F-91191 Gif-sur-Yvette, France); BLANC, Aurélien (Institut Laue Langevin (ILL), F-38042 Grenoble Cedex 9, France); SIMPSON, Gary (LPSC, Université Joseph Fourier Grenoble 1, CNRS/IN2P3, F-38026 Grenoble Cedex, France); DE FRANCE, Gilles (Grand Accélérateur National d'Ions Lourds (GANIL), F-14076 Caen Cedex 5, France); JENTSCHEL, Michael (Institut Laue Langevin (ILL), F-38042 Grenoble Cedex 9, France); LITAIZE, Olivier (CEA, DEN, DER, Cadarache, F-13108 Saint-Paul-lez-Durance, France); SEROT, Olivier (CEA, DEN, DER, Cadarache, F-13108 Saint-Paul-lez-Durance, France); MUTTI, Paolo (Institut Laue Langevin (ILL), F-38042 Grenoble Cedex 9, France); LEONI, Silvia (INFN, 35020 Legarno, Italy); MATERNA, Thomas (CEA, DRF, IRFU, Université Paris-Saclay, F-91191 Gif-sur-Yvette, France); SOLDNER, Torsten (Institut Laue Langevin (ILL), F-38042 Grenoble Cedex 9, France); KOESTER, Ulli (Institut Laue Langevin (ILL), F-38042 Grenoble Cedex 9, France); URBAN, Waldemar (Faculty of Physics, University of Warsaw, PL-02-093 Warszawa, Poland)

Orateur: M. RAPALA, Michal (CEA Saclay/IRFU/DPhN/LERN)

Classification de Session: Nuclear physics - experimental

ID de Contribution: **62** Type: **Poster**

Search for dark matter signals with 10-year obsevations by H.E.S.S. towards the Galactic Centre

The presence of dark matter in the Universe is nowadays widely supported by a large body of astronomical and cosmological observations.
The central region of the Milky Way is expected to harbor a large amount of dark matter.
Very-high-energy (>100 GeV) gamma-ray observations with the H.E.S.S. array of Imaging Atmospheric Cherenkov Telescopes are powerful probes to look for self-annihilations of dark matter particles in the Galactic Centre.
A new search for a dark matter signal has been carried out on the full H.E.S.S.-I dataset of 2004-2014 observations with a 2D-binned likelihood method using spectral and spatial properties of signal and background.
Updated constraints are derived on the velocity-weighted annihilation cross section. Higher statistics from the 10-years Galactic Center dataset of H.E.S.S. I together with a novel analysis technique allow to significantly improve the sensitivity.
New results will be presented.

Auteurs principaux: M. MOULIN, Emmanuel (CEA); Mlle RINCHIUSO, Lucia (CEA)

Orateur: Mlle RINCHIUSO, Lucia (CEA)

ID de Contribution: **63** Type: **Talk**

Development of new n-on-p active edge pixel detectors for ATLAS Inner Detector Upgrade

mercredi 31 mai 2017 10:10 (15 minutes)

Silicon detectors are playing a key role in High Energy Physics (HEP) experiments due to their superior tracking capabilities. In view of the upgrade plans of ATLAS experiment toward the high luminosity, the silicon tracking detector (ITK) will be operated in a very intense radiation environment. This work addresses the study of active edge n-in-p planar sensors. Active edge planar pixel sensors are promising candidates to instrument the inner layers of the new ATLAS pixel
detector for HL-LHC, thanks to its radiation tolerant properties and the increased fraction
of active area due to a distance as low as 50µm between the last pixel implants and the activate edge. This presentation will show the recent results of different and new characterization technique of silicon pixel detectors.

Auteur principal: Mme RASHID, Tasneem (LAL)

Co-auteurs: Dr LOUNIS, Abdenour (LAL); HOHOV, Dymtro (LAL)

Orateur: Mme RASHID, Tasneem (LAL)

Classification de Session: Particle physics

ID de Contribution: **64** Type: **Talk**

The High Granularity Timing Detector

mercredi 31 mai 2017 09:50 (15 minutes)

In 2026 the high luminosity upgrade of the LHC (HL-LHC) will begin, bringing an improvement of a factor up to five for the luminosity (rate of interaction) in comparison to the original design value. One of the implication of the increase of the luminosity is an increase of the pile-up (number of interactions per collision) from around 25 events during the Run1 up to 200 during the HL-LHC for the ATLAS experiment. To mitigate this effect the different detectors of ATLAS need to be upgraded and new ones need to be installed, one of the new detector is the High Granularity Timing Detector (HGTD) a detector able to mesure the time of passage of particle with a very high precision. This detector would be situated in the end-caps of ATLAS at a distance of 3.5 meters of the interaction point. In this presentation I will present the technology behind the HGTD and explain how timing information can be use to mitigate the effect of the pile up in the condition of the HL-LHC. I will then give you a more concrete exemple of this detector capability with a 5D electron reconstruction tested using a full simulation event with a pile-up of 200 in the ATLAS detector.

Auteur principal: M. ALLAIRE, Corentin (LAL)

Orateur: M. ALLAIRE, Corentin (LAL)

Classification de Session: Particle physics

ID de Contribution: **66** Type: **Non spécifié**

D2I2

mercredi 31 mai 2017 14:45 (10 minutes)

Orateur: PORTAIL, Claire (Institut de physique nucléaire)

Classification de Session: PhD associations

ID de Contribution: **67** Type: **Non spécifié**

Synapse

mercredi 31 mai 2017 14:55 (10 minutes)

Orateur: Mlle GEORGIADOU, Anastasia (IPN)

Classification de Session: PhD associations

ID de Contribution: **68** Type: **Non spécifié**

SFP

mercredi 31 mai 2017 15:05 (10 minutes)

Orateur: LAUDRAIN, Antoine (LAL-ATLAS)

Classification de Session: PhD associations