



Tipp 2014 - Third International Conference on Technology and Instrumentation in Particle Physics: POSTERS (more information on Indico)

Displaying 163 contributions out of 423

[A Cylindrical GEM Detector with Analog Readout for the BESIII Experiment](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

We are developing a low mass, cylindrical GEM detector with analog readout for the inner tracker upgrade of the BESIII experiment at the BEPC-II e^+e^- collider. The GEM detector will replace the current inner drift chamber that is suffering early aging due to the increase of the machine luminosity. The new inner tracker is expected to match the momentum resolution ($\Delta p/p \sim 0.5\%$ at 1 GeV) and ra ... [More](#)

Presented by Gianluigi CIBINETTO

[A Data Acquisition System using the 10 GSa/s PSEC4 Waveform Digitizing ASIC](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

A data acquisition (DAQ) system using the 10 - 15 Gigasample/second (GSa/s) PSEC4 waveform recording Application Specific Integrated Circuit (ASIC) has been developed as part of the Large Area Picosecond Photo-Detector Collaboration (LAPPD). The LAPPD collaboration is developing $20 \times 20 \text{ cm}^2$ glass-body micro-channel plate (MCP) photomultiplier tubes equipped with an economical 1.5 GHz, ... [More](#)

Presented by eric OBERLA

[A Method of Frequency-tracking in Direct Detection Doppler Wind LIDAR](#)

Type: Poster Track: Technology transfer: 5a) Industry Liaisons

The Direct Detection Doppler Wind LIDAR (DWL) is of great significance in the study of global wind measurements and climatology. The DWL adopting double-edge technique of Fabry-Perot etalon requires outgoing laser frequency to fall on the abrupt linear region of the transmittance curve of F-P etalon. Vibration and temperature variation would cause frequency shift, which will further induce laser f ... [More](#)

Presented by Mr. Yuan YAO, Ms. Xin GAO, Ziru SANG, Mr. Futian LIANG, Ge JIN

[A Monolithic Active Pixel Sensor for the Upgrade of the ALICE ITS](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

ALICE is the LHC experiment dedicated to the study of the properties of the Quark-Gluon Plasma in nucleus-nucleus interactions at LHC energies. In order to improve the ALICE physics capabilities, the apparatus will be substantially upgraded during the LHC Long Shutdown 2 (LS2). In particular, the Inner Tracking System will be replaced by a new detector based on an innovative radiation tolerant mo ... [More](#)

Presented by Alberto COLLU

[A New Data Concentrator for the CMS Muon Barrel Track Finder - Phase I Upgrade](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The CMS muon trigger will undergo considerable enhancements during Phase I upgrade. In order to improve rate reduction and efficiency the full muon trigger chain will be completely redesigned: the plan is to move from a redundant scheme, where the three subdetectors (CSC, DT, RPC) have a separate track finder, to three geographical track finders (barrel, endcap and overlap) that combine trigger pr ... [More](#)

Presented by Andrea TRIOSSI

[A New High-Intensity Proton Irradiation Facility at the CERN PS East Area](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The proton and mixed-field irradiation facilities in the CERN PS East Area (known as IRRAD1 and IRRAD2), were heavily and successfully exploited for irradiation of particle detectors, electronic components and materials since 1992. These facilities exploited the particle bursts - protons with momentum of 24GeV/c - delivered from the PS accelerator in "spills" of about 400ms (slow extraction). ... [More](#)

Presented by Dr. Federico RAVOTTI

[A Pixelated Positron Timing Counter with Fast Plastic Scintillator Readout by SiPMs for the MEG-II Experiment](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The MEG experiment searches for the charged lepton flavor violation, $\mu \rightarrow e \gamma$ decay, with an unprecedented sensitivity which is expected to occur in the context of the new physics beyond standard models. The upgrade of the experiment (MEG-II) is planned to improve the sensitivity by another order of magnitude with a higher beam intensity and improved detector performance. ... [More](#)

Presented by Miki NISHIMURA

[A Prototype of Beam Loss Monitoring Detector based on CVD diamond for the NSRL](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

In past years, BLM systems have been designed and implemented for the Shanghai Synchrotron Radiation Facility (SSRF) and the National Synchrotron Radiation Laboratory. The Bergoz BLM detector and direct-readout Si-PIN BLM detector were mixed used in the BLM systems, for different monitoring purpose of the linac, the booster and the storage ring. Si-PIN detector is excellent as it can get accurate ... [More](#)

Presented by Dr. Ming ZENG

[A Prototype of LaBr3:Ce in situ Gamma-Ray Spectrometer for Marine Environmental Monitoring](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

A prototype of LaBr3:Ce in situ gamma-ray spectrometer for marine environmental monitoring is developed and applied for marine measurement. A 2-inch LaBr3:Ce scintillator is used in the detector, and a digital pulse process electronics is chosen as the pulse height analyzer. Both Ethernet and RS-485 are implemented as the data and control interface of the system, and a GPS module is also built-in ... [More](#)

Presented by Dr. Ming ZENG, Dr. Zhi ZENG

[A VCSEL driver ASIC at 8 Gb/s for data transmission over fiber for detector front-end readout in a particle experiment](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

We report the development of a VCSEL driver based on a commercial 0.25-micron silicon-on-sapphire CMOS technology. The driver is designed with a speed of 8 Gb/s with I2C configuration. The QFN packaged prototype measures up to 10 Gb/s in a miniature dual channel optical transmitter module called MTx. The ASIC and the custom MTx are prototypes for an optical link that is under development to read ... [More](#)

Presented by Jingbo YE

[A fast sampling, Wilkinson ADC for Cross Strip Microchannel Plate Readout](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

To accurately reconstruct the charge cloud centroid from a microchannel plate (MCP) photon event with a cross strip anode readout, a fast sampling ADC is required. The digitization chip, HalfGraph, is an 8 channel, 12 bit Wilkinson based ADC manufactured on a 0.25um TSMC CMOS process. Each channel has 32 samples with 2048 addressable storage cells and over threshold triggering capability. The samp ... [More](#)

Presented by Dr. Michael COONEY

[A low noise and low drift linear power conditioner with an analogue thermal foldback protection scheme](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

Experiments searching for rare nuclear events, such as the neutrinoless double beta decay, need to operate for several years in order to reach the required sensitivity. The readout electronics for such systems must guarantee stable operation during the whole data taking phase. Major experiments in the field are CUORE and LUCIFER, both based on macrobolometers and currently under construction und ... [More](#)

Presented by Claudio GOTTI

[A method for production and control activity concentration of thoron progenies in the thoron reference chamber](#)

Type: Poster Track: Sensors: 1e) Novel technologies

1. Abstract: The long-term stability and homogeneity of activity concentration for thoron and its progenies are of great importance in a calibration facility, but this is difficult for a high and stable activity concentration of thoron progenies due to longer life of ^{212}Pb . In order to establish and maintain a constant high activity concentration of thoron progenies easily, the compensation sys ... [More](#)

Presented by Prof. Detao XIAO

[A portable tracking detector for muon radiography experiments](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

A portable tracking detector for muon radiography experiments Cosmic muon radiography is a tool for examination of large scale objects via proper measurement of the absorption of the atmospheric muons. In this application of particle physics detectors standard HEP techniques encounter new challenges. The REGARD group of Wigner RCP (Budapest) has developed a portable muon telescope for outd ... [More](#)

Presented by Laszlo OLAH

[A power-pulsing scheme for the CLIC vertex detector and its 3D integration](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The vertex detector is the innermost detector at the proposed CLIC linear electron-positron collider. It is composed of several layers of pixel sensors and readout ASICs, and the barrel region is made of "ladders". The precision physics requirements limit the

material budget for sensors, readout, support, cooling and cabling to less than 0.2% of a radiation length (X₀) per detection layer. How ... [More](#)

Presented by Cristian Alejandro FUENTES ROJAS

[A prototype for the data acquisition of the CBM Micro Vertex Detector](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The Compressed Baryonic Matter Experiment (CBM) will be installed at the SIS-100/SIS-300 accelerators of the FAIR facility, which is currently under construction at Darmstadt, Germany. Its purpose is the study of hadronic matter in the region of highest net baryon density with rare probes, e.g. open charm particles. To reconstruct those particles, a Micro Vertex Detector (MVD) with a ... [More](#)

Presented by Borislav MILANOVIĆ

[A radiation hardness CMOS layout by only changing procedure of a layer](#)

Type: Poster Track: Experiments: 2b) Astrophysics and Space Instrumentation

The impact from radiation to complementary metal-oxide semiconductor (CMOS) circuit which is used as read out circuit for high energy experiments or space satellite has been categorized into two problems: Total ionizing dose (TID) reflecting the long-period-time effects exists and the other is the single event effects (SEE) characterizing short time result. TID effect makes threshold voltages shif ... [More](#)

Presented by Mr. Daehee LEE

[A study for the ATLAS RPC system upgrade in view of the High Luminosity \(HL\) LHC](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The architecture of the present trigger system in the ATLAS muon barrel was designed according to a reference luminosity of 1034 cm⁻² s⁻¹ with a safety factor of 5 with respect to the simulated background rates, confirmed by the 2012 data. In the HL-LHC conditions, we expect a luminosity of 5x1034 cm⁻² s⁻¹ and a rate about an order of magnitude higher than the present one. This, while boosting t ... [More](#)

Presented by Giulio AIELLI

[A study of silicon sensor for the ILD ECAL](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The International Large Detector(ILD) is a proposed detector for the International Linear Collider(ILC). It has been designed to achieve an excellent Jet Energy Resolution by using Particle Flow Algorithms (PFA), which rely on the ability to separate nearby particles within jets. PFA requires calorimeters with high granularity. The ILD Electromagnetic Calorimeter(ECAL) is a sampling calorimeter wi ... [More](#)

Presented by Tatsuhiko TOMITA

[Aging experiment of LAB based liquid scintillator for JUNO experiment](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

This talk introduces the aging experiment of JUNO (Jiangmen Underground Neutrino Observatory) liquid scintillator (LS) with several containers. JUNO will need 20kt LS, and energy resolution of detector reach to 3%/E and LS detector will run 10-15 years, so LS stability and compatibility in containers is very important. The method and results of LS aging with containers are reported.

Presented by Boxiang YU

[An Array of Spherically Dimpled Scintillating Cells for an Integrated Readout Layer](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The CALICE collaboration has been developing calorimetry for particle flow algorithms based detectors. To measure particle shower development, a finely segmented calorimeter optimized for PFA must consist of millions of channels. A scintillator-based

calorimeter with cells of size 30 x 30 x 3 mm³ and read out with silicon photo-multipliers (SiPMs) shows great promise. The construction and assembly ... [More](#)

Presented by Dr. Alexandre DYSHKANT

[An FPGA-based full mesh enabled ATCA general purpose processor board](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The Pulsar II is an FPGA-based full mesh enabled ATCA general purpose processor board, its design is motivated by the silicon-based tracking trigger needs for LHC experiments. Some of the main challenges of silicon-based tracking trigger are the complex data dispatching and the pattern recognition and track fitting. Data dispatching is where the hits from many thousands silicon modules must be org ... [More](#)

Presented by Yasuyuki OKUMURA

[Annealing studies with the CDF Run II Silicon Vertex Detector](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

Between Run II commissioning in early 2001 and the end of operations in September 2011, the Tevatron collider delivered 12 inverse femtobarns of proton-antiproton collisions to the Collider Detector at Fermilab (CDF). During that time, the CDF silicon vertex detector was subject to radiation doses of up to 12 Mrad. After the end of operations, the silicon detector was annealed for 24 ... [More](#)

Presented by Michelle STANCARI

[Atomic layer deposition of nano-composite films to produce large area microchannel plates for electron amplification](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

Microchannel plates (MCPs) are excellent electron amplifiers and when incorporated into photodetectors they provide a combination of unique properties such as high gain, high spatial resolution, high temporal resolution and low dark current. MCPs can be used in wide variety of applications such as imaging spectroscopy, photodetectors for high energy physics and astronomy, time-of-flight mass spect ... [More](#)

Presented by Dr. anil MANE

[Attempt at laser spectroscopy of pionic helium atoms at PSI](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

Metastable pionic helium atoms $\pi^+\text{He}^+$ are heretofore hypothetical three-body Coulomb systems composed of a helium nucleus, an electron occupying the 1s ground state, and a π^- occupying a Rydberg state, with principal and orbital angular momentum quantum numbers of around $n \sim \ell + 1 = 16$ [1-2]. The atom has been conjectured to explain the apparent metastability of π^- observed in ... [More](#)

Presented by Masaki HORI

[Background optimization for a new spherical gas detector for very light WIMP detection](#)

Type: Poster Track: Experiments: 2d) Dark Matter Detectors

![[enter image description here]][1] The Spherical gaseous detector (or Spherical Proportional Counter, SPC) is a novel type of particle detector, with a broad range of applications. Its main features include a very low capacitance, then a potential low energy threshold independent of the volume, a good energy resolution, robustness and a single detection readout channel. Applications range ... [More](#)

Presented by Mr. ALI DASTGHEIBI FARD

[CMOS compatible PureB technology for robust UV/VUV/EUV photodiode detectors and imagers](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

With PureB technology, Si photodiode detectors have been fabricated and commercialized with outstanding optical and electrical performance for low penetration-depth beams such as vacuum-/extreme-ultraviolet (VUV/EUV) light and low-energy electrons of which the minimum penetration depth in Si is only ~5 nm. The PureB layer is formed by a pure-boron chemical- vapor deposition (CVD) in a manner that ... [More](#)

Presented by Mr. Lin QI

[CMS Hadron Forward Calorimeter Phase I Upgrade Status](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The Hadron Forward Calorimeter of CMS is going through a complete Phase I upgrade. The current photomultiplier tubes (PMTs) are being replaced with thinner window, higher quantum efficiency, four-anode photomultiplier tubes. The new PMTs will provide better light detection performance, a significantly reduced background and unique handles to recover the signal in the presence of background. This r ... [More](#)

Presented by Prof. Yasar ONEL

[COORDINATE-SENSITIVE MICROELECTRONIC DETECTOR](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

The term "Coordinate-sensitive microelectronic detector" means a device for one dimensional simultaneous detection of separated in the space electron flow, falling on the working surface of the detector. Laser mass spectrometry is one of the most beneficial applications of this detector, but these detectors can be successfully used in other areas where one-dimensional spatial detection of charged ... [More](#)

Presented by Dr. Dmitry NAGORNY

[Calibration and monitoring of the Tile Calorimeter during LHC Run-I](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The ATLAS hadronic calorimeter, the Tile Calorimeter (TileCal), is a non-compensating sampling calorimeter comprised of steel and scintillating plastic tiles which are read-out by photomultiplier tubes (PMTs). The TileCal is regularly monitored and calibrated by several different calibration systems: a Cs radioactive source that illuminates the scintillating tiles directly, a laser light system to ... [More](#)

Presented by Smita DARMORA

[Carbon Sputtering Technology for MPGD detectors](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

Carbon sputtering is a promising technology for making resistive electrodes for MPGDs. The research on this technology started in the context of the development of MicroMEGAS detectors for the ATLAS muon system upgrade. By sputtering carbon layers of varying thickness (a few hundred to a few thousand angstrom) the surface resistivity can be controlled between $400 \text{ k } \Omega/\text{sq.}$ and $2 \text{ G } \Omega/\text{sq.}$ Several ... [More](#)

Presented by Dr. Atsuhiko OCHI

[Characterization of Large Area Picosecond Photodetectors Using A Pulsed Laser](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The Large Area Picosecond Photodetector Collaboration (LAPPD) is developing economical techniques for fabricating large area, glass-body microchannel-plate photomultiplier tubes (MCP-PMTs), scalable for use in a variety of High Energy Physics applications. An important capability of these photosensors is in precision measurements of arrival times and positions of single photons. Prototype LAPPD sy ... [More](#)

Presented by Matthew WETSTEIN

[Characterization of the PANDA MVD Trapezoidal Silicon Strip Sensors and Their First Operation in a Proton Beam](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

The \overline{p} -PANDA-experiment will be one of the main experiments inside the upcoming Facility for Antiproton and Ion Research (FAIR) at the GSI in Darmstadt. The fixed target experiment will explore $\overline{p}p$ annihilation in the charm mass region with intense, phase space cooled beams with momenta between 1.5 and 15 GeV/c. The innermost subdetector of $\overline{p}p$... [More](#)

Presented by Dariusch DEERMANN

[Construction and test of high precision drift-tube \(sMDT\) chambers for the ATLAS muon spectrometer](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

For the upgrade of the ATLAS muon spectrometer in March 2014 new muon tracking chambers (sMDT) with drift-tubes of 15 mm diameter, half of the value of the standard ATLAS Monitored Drift-Tubes (MDT) chambers, and 10 μ m positioning accuracy of the sense wires have been constructed. The new chambers are designed to be fully compatible with the present ATLAS services but, with respect to the ... [More](#)

Presented by Federico SFORZA

[Dark Matter Detector Prototype testing area Underground](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

Located 350 feet beneath the surface the MINOS Underground Areas, at Fermilab provide a useful shallow testing site for Dark Matter Detector R&D. It is accessible 24hrs/day, 365 days/year, under normal circumstances, with minimal training. The area is fully supported by Fermilab staff and resources, including network capabilities and other utilities. It has been used by the DAMIC and COUPP experi ... [More](#)

Presented by Dr. BILL LEE

[Data Acquisition System with data reduction in real-time mode](#)

Type: Poster Session: [Poster Session + Tea](#)

Track: Data-processing: 3c) Embedded software

Studies being performed nowadays in the field of plasma physics and controlled nuclear fusion, are continuously becoming more complex. They advance new challenges on the diagnostic equipment. Several of the basic requirements for a modern diagnostic technique are an easy scaling on multi-channel measurement systems, simultaneity of recording channels and the possibility of adapting the equipment b ... [More](#)

Presented by Karina MARTIN

[Deformation Monitoring of a Tracking Particle Detector using Fiber Bragg Grating sensors](#)

Type: Poster Track: Emerging technologies: 4e) Precision engineering

The frontier evolution of a gaseous tracking particle detector technology has been moved in developing Micro-Pattern Gas Detectors that can achieve unprecedented spatial resolution, high rate capability and large sensitive area. However, also the geometry of such kind of tracking detector, in spite of the particular technology used, has to be known with a precision of the order of few tens of μ m ... [More](#)

Presented by Dr. Massimo DELLA PIETRA

[Design and operation of a Small Gas Electron Multiplier detectors at KACST Detector Lab: Constructions and Preliminary Results](#)

Type: Poster Track: Technology transfer: 5b) Health and healthcare

The Gas Electron Multiplier detectors technology is well known for its high counting rate, charge and position resolution capabilities. Under the umbrella of the KACST Detector

Laboratory (KDL) project we have succeeded in designing, constructing and, operating a single channel small (10x10 cm²) GEM detector for radiation detection applications. The performances of the detector was tested using ... [More](#)

Presented by Dr. Abdullrahman H. MAGHRABI, Abdullrahman ALGHAMDI, Mr. Mohammad S. ALANAZI

[Design of CMS Beam Halo Monitor system](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

A fast and directional monitoring system for the CMS experiment is designed to provide an online, bunch-by-bunch measurement of beam background induced by beam halo interactions, separately for each beam. The background detection is based on Cherenkov radiation produced in synthetic fused silica read out by a fast, UV sensitive photomultiplier tube. Twenty detector units per end will be azimuthally ... [More](#)

Presented by Stella ORFANELLI

[Design of a Deep Buffer for the 0.13um CMOS PSEC5 Waveform Sampling ASIC](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

We present a design for increasing the buffer length from 25.6ns to 3.3us in a 2-channel prototype of PSEC5, a custom integrated circuit designed for analog-to-digital conversion of fast analog signals at a sampling rate between 5 and 15 Gigasamples/second. The prototype is being designed in the same 0.13um IBM-8RF CMOS process as the PSEC4 ASIC [1]. The major improvements are the increase of the ... [More](#)

Presented by Mircea BOGDAN

[Designing and Construction a Prototype GEM Detector for 2D Proton Dosimetry Applications](#)

Type: Poster Track: Technology transfer: 5b) Health and healthcare

The main objective of this project is to develop a medical imaging system to be used in the two dimensions Proton dosimetry applications using the gas electron multiplier technology. These include designing and construction of the detector, readout board, and related electronics. The first step toward attaining the goal of this project is to build a prototype of triple-GEM detector (10cm x10cm) th ... [More](#)

Presented by Dr. Abdullrahman S. ALGHAMDI, Dr. Abdullrahman H. MAGHRABI

[Detector Development for the SPT-3G Experiment](#)

Type: Poster Track: Experiments: 2b) Astrophysics and Space Instrumentation

SPT-3G is an ambitious focal plane upgrade for the South Pole Telescope (SPT) platform. The SPT is one of the world's premier mm-wave observatories and has been optimized for precision measurements of the Cosmic Microwave Background. In this talk, I will discuss ongoing research and development of multi-chroic Transition Edge Sensor (TES) bolometer arrays which will be the detector technology ... [More](#)

Presented by clarence CHANG

[Detector Module Design, Construction and Performance for the LHCb SciFi Tracker](#)

Type: Poster Track: Sensors: 1e) Novel technologies

The Scintillating Fibre (SciFi) Tracker for the LHCb Upgrade (CERN/LHCC 2014-001; LHCb TDR 15) is based on 2.5 m long multi-layered ribbons from 10,000 km of scintillating fibre over 12 planes covering 350 m². The planes are separated into modular detectors, each with cooled silicon photomultiplier (SiPM) arrays for photo-readout. In this talk, we will present the construction and perfo ... [More](#)

Presented by Robert Jan EKELHOF

[Development of LBNE Photon Detector Front End Electronics](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The LBNE (Long-Baseline Neutrino Experiment) is the next generation accelerator-based neutrino oscillation experiment planned in US. The experiment will use a new muon-neutrino beam sent from Fermi National Accelerator Laboratory and will detect electron-neutrino appearance and muon-neutrino disappearance using a Liquid Argon TPC located at a distance of 1300 km at Sanford Underground Research Fac ... [More](#)

Presented by Zelimir DJURCIC

[Development of Multipurpose Aerogel Cherenkov Counter](#)

Type: Poster Track: Sensors: 1e) Novel technologies

We have developed a multipurpose aerogel Cherenkov counter (M-ACC) which works particle identification in a narrow space and can cover large area with arbitrary shapes. Generally, a size of photodetector which is required for aerogel Cherenkov detector tends to become bigger in proportion to an effective area. Therefore, it is difficult to make detector which has large area and thin width. We try ... [More](#)

Presented by Mr. hiroshi ITO

[Development of Radiation Damage Model using TCAD tools for Irradiated Silicon Sensors](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

During the high luminosity upgrade of LHC the CMS tracking system consisting of silicon pixel and strip sensors will face intense radiation environment than the present system was designed for. It is important to complement the measurements of the irradiated Si strip sensors with device simulation, which helps in both the understanding of the device behavior and optimizing the design parameters ne ... [More](#)

Presented by Ranjeet DALAL

[Development of a GEM-based TPC for H-dibaryon Search at J-PARC](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

We have been developing a TPC using GEMs and a gating grid to search for the H-dibaryon at J-PARC with high rate hadron beams up to 10^6 count per second (cps) / cm^2 . The TPC consists of an octagonal-shape drift cage of 50 cm diameter and 55 cm height, filled with Ar-CH₄ (90:10) gas, and the end cap chamber consisting of a gating grid plane, 3-layer GEMs, and a pad plane. The TPC is operated in ... [More](#)

Presented by Hiroyuki SAKO

[Development of a Silicon PIN Diode X-Ray Detector](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

X-ray detectors currently on the market are expensive, costing thousands of dollars each and still limited in data acquisition options. The goal of this project is to create a device that can be used to accurately measure gamma and x-ray flux, calculate radiation dose rates, and be simple and inexpensive to produce. Developing an accurate and reliable system of measuring gamma and x-ray flux wil ... [More](#)

Presented by Joshua ABRAMOVI TCH

[Development of a new fast shower maximum detector based on micro channel plates photomultipliers \(MCP-PMT\) as an active element.](#)

Type: Poster Track: Sensors: 1a) Calorimetry

One possibility to make a fast and radiation resistant shower maximum (SM) detector is to use a secondary emitter as an active element. We present below test beam results, obtained with different types of the photo detectors based on micro channel plates (MCP)

as the secondary emitter. The SM time resolution - we obtained for this new type of detector is at the level of 20-30 ps. We estimate that ... [More](#)

Presented by Dr. Anatoly RONZHIN

[Development of a \$ne \rightarrow \gamma\$ ultra-fast shower maximum detector based on micro channel plates \(MCP\) as an active element.](#)

Type: Poster Track: Sensors: 1e) Novel technologies

Future calorimeters and shower maximum detectors at high luminosity accelerators need to be very radiation resistant and very fast. In this report we outline the study of the development of such detectors using microchannel plate (MCP) secondary emitters. The first proposal to use secondary emitters in such a detector can be found in Ref. [1]. Our research is based on the use of MCP secondary emit ... [More](#)

Presented by Dr. Erik RAMBERG

[Development of a novel Micro Pattern Gaseous Detector for cosmic ray muon tomography.](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Cosmic ray tomography is a technique under development since years. It consists in using particle detectors to reconstruct the scattering angle of cosmic rays traversing the volume under inspection, thus revealing the presence of materials with high atomic number, as radioactive elements or heavy metals. Although the validity of the muon tomography has already been demonstrated, its use on a large ... [More](#)

Presented by Dr. Michela BIGLIETTI, Paolo IENGO, Stefano MASTROIANNI, Fabrizio PETRUCCI

[Development of high-rate RPCs](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Traditionally RPCs use either Bakelite or glass as resistive plates. Compared with other Micro-pattern gas detectors, RPCs are known to suffer from rate limitations. The rate capability of the devices is defined by the signal size, bulk resistivity of the resistive electrode and the thickness of the electrode. We report on efforts to develop low-resistivity Bakelite and glass, as well as ... [More](#)

Presented by Lei XIA

[Development of large area pixel modules for the ATLAS HL-LHC tracker upgrade](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

ATLAS is proposing to replace the entire tracking system for operation at the HL-LHC. This will include a significantly larger pixel detector. This paper reports on the development of large area planar detectors for the outer pixel layers and the pixel endcaps. Large area sensors have been fabricated and mounted onto 4 FE-I4 readout ASICs, so called quad-modules, and their performance evaluated in ... [More](#)

Presented by Craig BUTTAR

[Development of large size hybrid Micromegas gaseous detectors for high hadron flux at COMPASS experiment](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Future physics programs using high intensity muon and hadron beams of a few hundred GeV on fixed targets are being prepared by the COMPASS experiment at CERN for the years 2015 and beyond. Large size Micromegas gaseous detectors (40x40cm² active area) which are used in COMPASS tracking since 2001 need to be upgraded in order to cope with the foreseen higher beam intensities (up to a few hundred o ... [More](#)

Presented by Damien NEYRET

[Development of liquid scintillator containing zirconium complex for neutrinoless double beta decay experiment](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

An organic liquid scintillator containing zirconium complex was studied for neutrinoless double beta decay experiment. A ^{96}Zr nuclei has a large Q-value (3.35MeV), and no experiment is planned to use as a target. In order to realize ton scale target isotope with good energy resolution (4%@2.5MeV), we have used zirconium beta-diketon complex which has huge solubility (over 10w.t.%) to ... [More](#)

Presented by Prof. Yoshiyuki FUKUDA

[Digital Optical Module Read-Out Electronics System of the KM3NeT Neutrino Telescope](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

The KM3NeT collaboration aims at the construction of a neutrino telescope with a volume of several cubic kilometres at the bottom of the Mediterranean Sea. The telescope will consist in an array of Digital Optical Modules (DOMs) that will detect the Cherenkov light originated by the interaction of the neutrinos with the matter in the proximity of the detector. In the present article ... [More](#)

Presented by Diego REAL

[Direct Dark Matter search with Liquid Argon at Gran Sasso: Dark Side](#)

Type: Poster Track: Experiments: 2d) Dark Matter Detectors

DarkSide-50 (DS-50) at Gran Sasso underground laboratory, Italy, is a direct dark matter search experiment based on a TPC with liquid argon from underground sources. The DS-50 TPC, with 50 kg of active argon and a projected fiducial mass of >33 kg, is installed inside an active neutron veto based on a boron-loaded organic scintillator. The neutron veto is built inside a water cherenkov muon ... [More](#)

Presented by Dr. Aldo IANNI

[EUDAQ and EUTelescope: Software Frameworks for Test Beam Data Acquisition and Analysis](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

A high resolution ($\sigma \sim 2\mu\text{m}$) beam telescope based on monolithic active pixel sensors was developed within the EUDET collaboration. It has become the primary beam tool for many groups including several CERN based experiments, largely due to its precise resolution, reliable operation and DAQ integration capabilities. For the telescope to deliver this excellent performance, two softw ... [More](#)

Presented by Hanno PERREY

[Electronics and Calibration system for the CMS Beam Halo Monitor](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

In the context of increasing luminosity of LHC, it will be important to accurately measure the Machine Induced Background. A new monitoring system will be installed in the CMS cavern for measuring the beam background at high radius. This detector is composed of synthetic quartz Cherenkov radiators, coupled to fast photomultiplier tubes (PMT). The readout chain of this detector will make use of man ... [More](#)

Presented by Nicolo TOSI

[Energy Reconstruction in the CALICE Analog Calorimeter Systems in Analog and Digital Mode](#)

Type: Poster Track: Sensors: 1a) Calorimetry

Within the CALICE collaboration different Calorimeter technologies are studied for a future linear collider. These technologies differ in active material, granularity and readout systems. The Analog Hadronic Calorimeter (AHCAL) reads out the signal height of the

energy deposition in each calorimeter cell, while the digital HCal detects hits by firing RPC pad sensors above a certain threshold. A 3 ... [More](#)

Presented by Coralie NEUBUSER

[Evaluation of a commercial FPGA for use in the CMS HCal Upgrade](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The CMS Hadron Calorimeter is undertaking a upgrade of front-end electronics which increases the channel count by a factor of three and adds additional TDC data. To transfer the larger data volume off-detector, CMS is evaluating a commercial FPGA with integrated high-speed serial link for use in the radiation environment. This talk will report on the studies of the candidate device under ionizing a ... [More](#)

Presented by Alexey FINKEL

[Evolution studies of the CMS endcap calorimeter response and implications for the High-Luminosity LHC upgrade](#)

Type: Poster Track: Sensors: 1a) Calorimetry

Calorimetry for the CMS detector is currently performed at the LHC with a lead tungstate crystal electromagnetic calorimeter (ECAL) and a brass/scintillator hadronic calorimeter (HCAL), both divided into barrel and endcap regions. High-Luminosity running at the LHC, which is planned for 2022 and beyond, will imply an order of magnitude increase in radiation levels and particle fluences with respect to the current LHC ... [More](#)

Presented by Michael PLANER

[Exploiting Charge Multiplication in Silicon Detectors for the HL-LHC](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

A number of measurements have recently reported a type of gain effect in silicon detectors for particle physics. This effect manifests itself in signal levels that significantly exceed expectations and in some cases even the signal charge generated by a passing MIP. The excess charge is seen in particular for heavily irradiated sensors operated at very high bias voltages. It is believed that this ... [More](#)

Presented by Christopher BETANCOURT

[First experimental results in High Pressure Xe+TMA mixtures towards supra-intrinsic performance in Dark Matter and \$0 \nu \nu\$ decay searches](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

High Pressure Gaseous Xenon shows outstanding intrinsic energy resolutions when compared with the liquid phase due to the smaller ($\sim 20x$) Fano factor. The gaseous phase should also show better electron to nuclear recoil discrimination based on the ratio of ionization to scintillation signals (S_2/S_1). The addition of trimethylamine (TMA) may further improve the energy resolution due to the Penning ... [More](#)

Presented by Carlos OLIVEIRA

[Front-End Electronics for the LHCb Upgrade Scintillating Fibre Tracker](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The LHCb detector will be upgraded during the next LHC shutdown in 2018/19. The tracker system will have a major overhaul. Its components will be replaced with new technologies in order to cope with the increased hit occupancy and radiation environment. A detector made of scintillating fibres read out by silicon photomultipliers (SiPM) is studied for this upgrade. Even if this technology has ... [More](#)

Presented by Herve CHANAL

[GPU for triggering in High Energy Physics Experiments](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

General Purpose Graphical Processing Units (GPGPU) provide exceptional massive parallel computing power with small power consumption. GPGPU bring high performance

computing with off-the-shelf products. However the full exploitation of this new computing paradigm will not be possible if software applications only partially employ massive parallelism. High Energy Physics experiments have much ... [More](#)

Presented by Antonio SIDOTI

[Gain stabilisation of SiPMs](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The gain of SiPMs depends both on bias voltage and on temperature. For stable operations, both need to be kept constant. In an ILC calorimeter with millions of channels this is a challenging task. It is, therefore, desirable to compensate automatically for temperature variations by readjusting the bias voltage. We have designed an adaptive power supply to achieve this task. We anticipate a ga ... [More](#)

Presented by Ivo POLAK

[Gaudi GPU Manager](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

During the second long shutdown in 2017, the beam will undergo an intensity increase. This will place an increased load on the hardware, necessitating an upgrade. One potentially very cost-effective way to add computational power would be to replace some of the CPU cores with graphics processing units or other modern many-core hardware. A number of people is currently working on GPU versions of a ... [More](#)

Presented by Alexey BADALOV

[Germanium detector configuration, readout and signal processing of the GERDA phase II experiment](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The Germanium Detector Array (GERDA) experiment, investigating neutrino-less double beta decay of ^{76}Ge at the Gran Sasso National Laboratory of INFN - Italy is currently upgrading to phase II, in order to improve both its sensitivity and background rejection capabilities. Many technological improvements are foreseen during the planned upgrade; among what most concerns the core of the GERDA experi ... [More](#)

Presented by Stefano RIBOLDI

[Hadronic interactions in the CALICE Si-W ECAL](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The physics goals of future lepton colliders ask for a very precise measurement of the jet energy. Highly granular calorimeters will play an important part in achieving this high precision as they allow the application of Particle Flow Algorithms. These calorimeters are being developed by the CALICE collaboration and several prototypes have already been build and tested. The optimization of PF ... [More](#)

Presented by Naomi VAN DER KOLK

[Hamamatsu MPPC S11834 as a detector of Cherenkov photons](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

Silicon photo multipliers are promising candidates to replace the photomultiplier tubes in Ring Imaging Cherenkov counters. Their main advantages are high gain, low operational voltage, insensitivity to magnetic fields, robust and compact design. Their big disadvantage for single photon detection is their high dark count rate, which is of the order of 0.1-1 MHz/mm². We have however already m ... [More](#)

Presented by Dr. Rok PESTOTNIK

[High-Rate Properties of Drift Tube Chambers for HL-LHC](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

The Monitored Drift Tube (MDT) chambers of the ATLAS experiment provide muon track reconstruction with a spatial resolution of about 35 μm and efficiency of almost 100% up

to the maximum expected background rates at nominal LHC luminosity. For much higher background rates, as they are anticipated for LHC luminosity upgrades (HL-LHC), sMDT chambers with 15 mm tube diameter, which is half the diame ... [More](#)

Presented by Philipp SCHWEGLER

[High-Resolution and Low Resource Time To Digital Converters for the KM3NeT Neutrino Telescope](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

Precise measurements on time intervals (TIs) are frequently needed in many physics applications such as particle detection. Time to Digital Converters (TDCs) perform conversion of TIs into a digital word. In the case of KM3NeT, thirty-one TDCs are used to discretize the photomultiplier output. Both the event width and the instant when it happens, require an accuracy of 1 ns. An oversampling tech ... [More](#)

Presented by Mr. David CALVO

[High-speed photon counting readout ASIC for spectral computed tomography detectors](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

This study is concerned with the simulation and design of a high-speed photon counting readout circuit for spectral computed tomography detectors. We propose a novel front-end architecture aimed at reducing dead time by introducing multi signal paths in each pixel. A prototype chip using 0.18um six-metal standard CMOS process is consisting of 16 x 16 pixels and periphery circuits. Each pixel has 2 ... [More](#)

Presented by DONG-UK KANG

[Initial Upgrade of the ATLAS Level 1 Calorimeter Trigger](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The Level--1 calorimeter trigger (L1Calo) of the ATLAS experiment has been operating well since the start of LHC data taking, and played a major role in the Higgs boson discovery. To face the new challenges posed by the upcoming increases of the LHC proton beam energy and luminosity, a series of upgrades is planned for L1Calo. This paper presents the L1Calo upgrade program for the initial upgr ... [More](#)

Presented by Dr. Duc Bao TA

[Irradiation tests and expected performance of readout electronics of the ATLAS hadronic endcap calorimeter for the HL-LHC](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

At the proposed high-luminosity LHC (HL-LHC) the readout electronics of the ATLAS Hadronic Endcap Calorimeter (HEC) will have to withstand a much harsher radiation environment than is present at the LHC design luminosity. The heart of HEC read-out electronics is the pre-amplifier and summing (PAS) system, which is realized in GaAs ASIC technology. These PAS devices are installed inside the LAr cr ... [More](#)

Presented by Alexander CHEPLAKOV

[KM3NeT On-shore Station and Broadcast Customization of White-Rabbit Switches Towards Optimizing Communication Resources for Shared Control Link](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

KM3NeT collaboration aims to build a cubic-kilometre scale neutrino telescope at the bottom of the Mediterranean Sea. KM3NeT is composed of an On-Shore Station which connects via an optical network to a matrix of underwater sensors, called Digital Optical Modules (DOMs). Bulk data will continuously flow from the sensors to the On-Shore Station and only a limited amount of bandwidth will be used fo ... [More](#)

Presented by Mr. Miguel MENDEZ

[Kinetic Inductance Detectors as light detectors for neutrino and dark matter searches](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

Large-mass arrays of bolometers proved to be good detectors for Neutrinoless Beta Decay (0νDBD) and Dark Matter (DM) searches. The CUORE and LUCIFER 0νDBD experiments at Laboratori Nazionali del Gran Sasso will start to take data in 2015. The potential of CUORE could be increased by removing the background due to alpha particles, by detecting the small amount of Cherenkov light (100 eV) emitted b ... [More](#)

Presented by Dr. Angelo CRUCIANI

[Kmax-based Event Mode Data Acquisition System for the University of Kentucky Accelerator Laboratory](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The University of Kentucky Acceleratory Laboratory (UKAL), a facility that possesses unique experimental capabilities for the scattering and detection of monoenergetic fast neutrons, has recently invested in updating its data acquisition capabilities. Starting with a new system for high-precision singles measurements, where subsequent analysis leads to the extraction of lifetimes in the femtoseco ... [More](#)

Presented by Mr. Benjamin CRIDER, Prof. Rodney PIERCEY

[LUCID upgrade - Atlas luminosity monitor for the LHC RUNs 2&3](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The ATLAS luminosity monitor, LUCID, has been completely redesigned. Both the detector and the associated read-out electronics have been improved in order to cope with the LHC luminosity increase foreseen for RUN 2 and RUN 3. The new operating conditions will require a careful tuning of the read-out electronics in order to optimize the signal-to-noise ratio. The new read-out electronics will a ... [More](#)

Presented by Federico LASAGNI MANGHI

[Light emission measurements of LFS-3 and GAGG:Ce single crystal samples under X-ray radiographic conditions](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

Abstract: Inorganic scintillating crystals are employed as radiation to light converters in most medical imaging modalities. This study presents a comparative investigation of the luminescence emission properties of LFS-3 (Zecotek Photonics Inc) and GAGG:Ce (Furukawa Co Ltd) single crystal scintillators under medical X-ray excitation. Both scintillating materials have dimensions of 10x10x10mm³ and ... [More](#)

Presented by Prof. Panagiotis LIAPARINOS

[Lowering the background level and the energy threshold of Micromegas x-ray detectors for axion searches](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Axion helioscopes search for solar axions by their conversion in x-rays in the presence of high magnetic fields. The use of low background x-ray detectors is an essential component contributing to the sensitivity of these searches. In this work, we review the recent advances on Micromegas detectors used in the CERN Axion Solar Telescope (CAST) and proposed for the future International Axion Observ ... [More](#)

Presented by Francisco Jose IGUAZ GUTIERREZ

[Luminescent and scintillation properties of LFS-3 and GAGG:Ce crystals](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

Many of the contemporary photonics technologies dealing with detection of radiation owe their existence to diverse scintillation materials. The scintillators play a decisive role in the registration of X-rays and γ -quanta necessary in many fields of application in

industry, medicine, fundamental research, and security where they are used to convert high-energy photons into visible light. Co-doped ... [More](#)

Presented by Dr. Stratos DAVID

[Luminosity measurement at CMS](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The measurement of the luminosity delivered by the LHC is pivotal for several key physics analyses. During the first three years of running, tremendous steps forwards have been made in the comprehension of the subtleties related to luminosity monitoring and calibration, which led to an unprecedented accuracy at a hadron collider. The detectors and corresponding algorithms employed to estimate onli ... [More](#)

Presented by Jessica Lynn LEONARD

[MWPC Tracking System Upgrade](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The Multiwire Proportional Chamber Tracking System at the Fermilab Test Beam Facility has been upgraded. Improvements include a renovation of the chambers themselves to vastly improve noise on the signals. An extensive study was done to find the most efficient gas for operation, and a completely new electronics read-out system has been created to improve reliability, and system compatibility. U ... [More](#)

Presented by Ewa SKUP

[Measurement of MICROMEGAS gaseous detectors on Synchrotron Radiation](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

With the continuous development of the micro-structure of gaseous detectors in recent years, a lot of the new detection requirements have been proposed in synchrotron radiation facility. To get the stable working time, lower discharge rate with long working term and higher effective gain, the new structure detector has been designed. One structure was based the coated Ge resistive anode readout wi ... [More](#)

Presented by Dr. Huirong QI

[Modular Detector with Picosecond Time Resolution](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

Nowadays the TOF measurement with picosecond time resolution is important feature in high-energy physics experiments and the detectors solving this task are important part of experimental setups. The initial point of our activity in this direction was a proposal of Fast Forward Detector (FFD) for MPD/NICA project [1]. The detector concept and results obtained with the first version of detector m ... [More](#)

Presented by Vladimir YUREVICH

[Muon Collider Detector Studies](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

A Multi-Tev Muon Collider is currently being studied by the Muon Accelerator Project (MAP). Experiments at the Muon Collider will need to cope with intense backgrounds from decays of muon beams. Physics and detector studies including full simulation of muon decay backgrounds are underway. We report on some of these studies utilizing the ILCroot detector simulation framework integrated wit ... [More](#)

Presented by Dr. Anna MAZZACANE

[Muon Scattering Tomography using Drift Chamber Detectors](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Muon scattering tomography (MST) allows the identification of shielded high atomic number, or Z materials by measuring the scattering angle of atmospheric cosmic ray muons passing through an inspection region. Materials of different densities can be

differentiated using this technique as muons interacting with high-Z materials are scattered to a greater degree by multiple Coulomb scattering than ... [More](#)

Presented by Dr. Jonathan BURNS

[Nanobeacon and Laser Beacon: KM3NeT Time Calibration Devices](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

A very large volume neutrino telescope is being constructed in the Mediterranean Sea by the KM3NeT collaboration. Thousands of glass spheres holding a set of 31 small area photomultipliers will be deployed at high depth forming a tri-dimensional matrix. The glass spheres, called Digital Optical Modules (DOMs), will detect the Cerenkov light induced by neutrino interactions with the surrounding mat ... [More](#)

Presented by David CALVO

[New High Rate Tracking area](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

A new area for beam tests of high rate tracking devices is being commissioned at the Fermilab Test Beam Facility. The new area is in the MTest beam line upstream of the pinhole collimator in the MT3 Alcove. This area is suitable for tests of detectors with modest transverse dimensions. High rate tests will use 120 GeV protons. The maximum rate available is approximately 2.5 GHz/cm²(1E10 particles/ ... [More](#)

Presented by Aria SOHA

[New developments of the PANDA Disc DIRC detector](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The DIRC-principle (detection of internally reflected Cherenkov light) allows a very compact approach for particle identification detectors. The PANDA detector at the future FAIR facility at GSI will use a Barrel-DIRC for the central region and a Disc-DIRC for the forward angular region between 5 and 22 degrees. It will be the first time, that a Disc-DIRC is used in a high performance 4 detecto ... [More](#)

Presented by Mr. Erik ETZELMÜLLER, Mr. Julian RIEKE

[New materials for the RPCs of the next future](#)

Type: Poster Track: Experiments: 2b) Astrophysics and Space Instrumentation

RPCs presently working in many accelerator and cosmic ray experiments are made up with resistive plates of phenolic laminate (improperly referred to as "bakelite") or glass. They are operated with gas mixtures mostly constituted of C₂H₂F₄, i-C₄H₁₀, and small amounts of SF₆. In the next future however all these materials should be reconsidered for different reasons. Indeed for the resistive p ... [More](#)

Presented by Rinaldo SANTONICO

[Novel results on small gap Micromegas microbulks](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Small gap micromegas detectors ($< 50\ \mu\text{m}$) are expected to be optimal for high pressure applications. These detectors are particularly relevant for rare event searches like double beta decay or dark matter search. We will present recent results obtained with small gap microbulks (25 and 12.5 μm) that have been manufactured recently. Electric field simulations taking into account the ... [More](#)

Presented by Dr. Esther FERRER RIBAS

[ORKA: The Golden Kaon Experiment. Precision measurement of \$K^+ \rightarrow \pi^+ \nu \bar{\nu}\$](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ decay is highly suppressed in the Standard Model (SM), while its rate can be predicted with minimal theoretical uncertainty. Precision measurement of the the branching ratio (BR) for this decay would be thus one of the

most incisive probes of quark flavor physics in the next years. The primary sensitivity goal of the ORKA experiment is 1000 events at the SM ... [More](#)

Presented by Dr. Anna MAZZACANE

[On chip design in the KM3NeT experiment](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The KM3NeT collaboration is building a large underwater neutrino telescope in the Mediterranean Sea. The detector operates by detecting Cherenkov light produced by the charged products of neutrino interactions in seawater. The detection is done by digital optical modules (DOMs), which each house 31 3 inch photomultiplier tubes (PMTs). A custom, low power, PMT base was developed to provide the high ... [More](#)

Presented by Deepak GAJANANA

[Operation and performance of the CMS tracker](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The CMS silicon tracker is the largest silicon detector ever built. It consists of an inner pixel detector, with 66 million read-out channels, and an outer 200 m² silicon strip detector with 10 millions channels. The successful operation of this detector during the first three years of LHC running with proton-proton and heavy ion collisions will be discussed. Results will include operational chal ... [More](#)

Presented by Martina MALBERTI

[Particle Identification with the Belle II TOP Counter](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The Time-of-Propagation (TOP) Cherenkov ring-imaging counter is a particle identification system designed for use in the barrel region of the Belle II spectrometer. The system detects Cherenkov photons produced by charged particles passing through one of 16 quartz bars arranged in a barrel around the inner tracking detectors. An array of 32 pixelated micro-channel plate photomultipliers (MCP-PMTs) ... [More](#)

Presented by Brian KIRBY

[Performance and Radiation Damage Effects in the LHCb Vertex Locator](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

LHCb is a dedicated experiment to study New Physics in the decays of heavy hadrons at the LHC. Heavy hadrons are identified through their flight distance in the Vertex Locator (VELO), hence the detector is critical for both the trigger and offline physics analyses. The VELO is the retractable silicon-strip detector surrounding the LHCb interaction point. It is located only 7 mm from the LHC beam ... [More](#)

Presented by Dr. Eduardo RODRIGUES

[Performance and perspectives of the diamond based Beam Condition Monitor for beam loss monitoring at CMS](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

At CMS, a beam loss monitoring system is operated to protect the silicon detectors from high particle rates, arising from intense beam loss events. As detectors, poly-crystalline CVD diamond sensors are placed around the beam pipe at several locations inside CMS. In case of extremely high detector currents, the LHC beams are automatically extracted from the LHC rings. Diamond is the detector ma ... [More](#)

Presented by Moritz GUTHOFF

[Performance of the EUSO-BALLOON Front-End Electronics](#)

Type: Poster Track: Experiments: 2b) Astrophysics and Space Instrumentation

Here the performance of EUSO-BALLOON front-end electronics with dedicated detector elements will be reported. EUSO-BALLOON is a balloon-borne pathfinder of the space-borne fluorescence detector JEM-EUSO (Extreme Universe Space Observatory on board

Japanese Experimental Module) on board the International Space Station. The goal of EUSO-BALLOON is to perform as a technological demonstrator of JEM-E ... [More](#)

Presented by Hiroko MIYAMOTO

[Performance studies of Silicon Photomultipliers with bulk-integrated quench resistors](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

In recent years Silicon Photomultipliers (SiPMs) profited from ongoing developments and improvements in technology, leading to devices having the potential to replace conventional photomultiplier tubes. The Geiger-mode operation of a SiPM requires a high-ohmic quench resistor, which is usually realized in conventional devices by a structured polysilicon layer on the surface, leading to a decrease ... [More](#)

Presented by Christian JENDRYSIK

[Pre-research of Front-end readout electronics system for APD detectors for synchrotron radiation](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

Since many types of the silicon avalanche photodiode (Si-APD) detector have been developed for synchrotron X-ray experiments on nuclear resonant scattering, a readout electronics system scheme is introduced which includes front-end electronics for amplification, shaping circuit, analog to digital converter and data processing and so on. The designing of the pre-amplifier is described. The program ... [More](#)

Presented by qiju LI

[Preliminary results from a test beam of ADRIANO prototype](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The physics program at future colliders demands an energy resolution of the calorimetric component of detectors at the limits of traditional techniques. The ADRIANO technology (*A Dual-readout Integrally Active Non-segmented Option*) is under development with an expected excellent performance. Results from detailed Montecarlo studies on the performance with respect to energy resolution, li ... [More](#)

Presented by Dr. Anna MAZZACANE

[Preparing Electrons and Photons High Level Trigger Reconstruction in CMS for Run II data taking](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The CMS experiment has been designed with a 2-level trigger system. The first level is implemented on custom-designed electronics. The second level is the so-called High Level Trigger (HLT), a streamlined version of the CMS offline reconstruction software running on a computer farm. For Run II of the Large Hadron Collider, the increase in center-of-mass energy and luminosity will raise the event r ... [More](#)

Presented by Simon REGNARD

[Progress in Developing a Spiral Fiber Tracker for the J-PARC E36 Experiment](#)

Type: Poster Track: Sensors: 1e) Novel technologies

This paper presents recent progress in developing a spiral fiber tracker for use in the E36 experiment scheduled to be performed at J-PARC, Japan. This positive kaon decay experiment using the stopped kaon method will search for physics beyond the standard model of particle physics through precision measurements of lepton flavor universality, heavy sterile neutrino search, and dark photon search. ... [More](#)

Presented by Dr. Makoto TABATA

[Prometeo: A portable test-bench for the upgraded front-end electronics of the ATLAS Tile calorimeter](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

Prometeo is the portable test-bench for the full certification of the front-end electronics of the ATLAS Tile calorimeter designed for the upgrade phase-II. It is a high throughput electronics system designed to simultaneously read-out all the samples from 12 channels at the LHC bunch crossing frequency and assess the quality of the data in real-time. The core of the system is a Xilinx Virtex 7 ev ... [More](#)

Presented by Carlos SOLANS SANCHEZ

[Prototype tests for a highly granular scintillator-based hadron calorimeter](#)

Type: Poster Track: Sensors: 1a) Calorimetry

Within the CALICE collaboration, several concepts for the hadronic calorimeter of a future linear collider detector are studied. After having demonstrated the capabilities of the measurement methods in "physics prototypes", the focus now lies on improving their implementation in "engineering prototypes", that are scalable to the full linear collider detector. The Analog Hadron Calorimeter (AHCAL ... [More](#)

Presented by Sebastian LAURIEN

[ROB performance in a high luminosity scenario](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The first layer of the CMS (Compact Muon Solenoid) DT (Drift Tube) readout system is built around the ROBs (Read Out Boards), which are responsible for the time measurement of the chamber signals to allow reconstruction of charged particle tracks with a resolution of 250 μm per cell. ROB boards have shown an excellent performance during LHC operation and are expected to continue their operati ... [More](#)

Presented by Jose Manuel CELA RUIZ

[ROESTI: A Front-end Electronics for Straw Tube Tracker in COMET Experiment](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The COMET experiment at J-PARC aims to search for the charged lepton flavor violating process of neutrinoless $\mu\text{-e}$ conversion with an improvement of a sensitivity by a factor of 10000 to the current limit. When the $\mu\text{-e}$ conversion occurs, almost all the energy of the muon mass is carried out by the electron which is expected to have the monochromatic energy of about 105 MeV. In order to achi ... [More](#)

Presented by Dr. Kazuki UENO

[Radiation hardness and stability of optical coupling materials for BelleII electromagnetic calorimeter](#)

Type: Poster Track: Sensors: 1a) Calorimetry

Optical coupling materials are usually applied to ensure good optical matching in the APD-scintillating crystal detection system. High transparency at the scintillating emission wavelength and material stability under irradiation are recommended requirements. In this work, silicon optical grease (BC630) and two-component epoxy resins (Epo-tek 301-2FL and Epo-tek 305), to be employed in electromag ... [More](#)

Presented by Alessia CEMMI

[Radiation-hard Active Pixel Sensors for HL-LHC Detector Upgrades based on HV/HR-CMOS Technology](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

We explore the concept of using deep-submicron HV-CMOS and imaging processes to produce a drop-in replacement for traditional radiation-hard silicon sensors. Unlike fully integrated monolithic active pixel sensors (MAPS), such active sensors contain simple circuits, e.g. amplifiers and discriminators, but still require a readout chip - which can be a traditional strip or pixel readout chip or a ta ... [More](#)

Presented by Simon FEIGL

[Real Time Pulse Analyzer for ITER Vertical Neutron Camera](#)

Type: Poster Track: Data-processing: 3c) Embedded software

The International Thermonuclear Experiment Reactor (ITER) is a large-scale scientific experiment intended to prove the viability of fusion as an energy source, and to collect the data necessary for the design and subsequent operation of the first electricity-producing fusion power plant. ITER is an experimental nuclear reactor operating with a magnetic toroidal field of 5.3 T, plasma current of ... [More](#)

Presented by Alina IVANOVA

[Recent Achievements of the ATLAS Upgrade Planar Pixel Sensors R&D Project](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

In the framework of the HL-LHC upgrade, the ATLAS experiment plans to introduce an all-silicon inner tracker with the HL-LHC upgrade to cope with the elevated occupancy. To investigate the suitability of pixel sensors using the proven planar technology for the upgraded tracker, the ATLAS Planar Pixel Sensor R&D Project was established comprising 19 institutes and more than 90 scientists. Main a ... [More](#)

Presented by Silke ALTENHEINER

[Recent Progress in the Development of Large Area Silica Aerogel for Use as RICH Radiator in the Belle II Experiment](#)

Type: Poster Track: Sensors: 1e) Novel technologies

This paper presents recent progress in the development and mass production of large area hydrophobic silica aerogels for use as a radiator in the aerogel-based ring-imaging Cherenkov (A-RICH) counter that will be installed in the forward end cap of the Belle II detector under upgrade at KEK, Japan. The proximity-focusing A-RICH system is especially designed to identify charged pions and kaons by t ... [More](#)

Presented by Dr. Makoto TABATA

[Research of silicon strip sensor specification and evaluation for the muon g-2/EDM experiment at J-PARC](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

The muon's anomalous magnetic moment ($g-2$) was measured with 0.54ppm accuracy. There is 3.3 sigma discrepancy between the SM prediction and measured value. Muon's electric dipole moment (EDM) limit is 10^{-19} e · cm. The muon $g-2$ /EDM at J-PARC (E34), aims to reach a sensitivity of 0.1 ppm, and try to measure EDM down to 10^{-21} e · cm sensitivity. In this experiment, we accelerate muon to the 3 ... [More](#)

Presented by Shoichiro NISHIMURA

[Scanning facility to irradiate mechanical structures for the LHC upgrade programme](#)

Type: Poster Track: Emerging technologies: 4e) Precision engineering

The existing luminosity of the LHC will be increased in stages to a factor of 10 above its current level (HL-LHC) by 2022. This planned increase in luminosity results in significantly higher levels of radiation inside the planned ATLAS Upgrade detector. This means existing detector technologies together with new components and materials need to be re-examined to evaluate their performance and dura ... [More](#)

Presented by Richard FRENCH

[Segmented scintillators with SiPM readout for measuring antiproton annihilations](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

The Atomic Spectroscopy and Collisions Using Slow Antiprotons (ASACUSA) experiment at the Antiproton Decelerator (AD) facility of CERN [1,2] recently constructed segmented scintillators to detect and track charged pions emerging from antiproton annihilations [3]. The detectors were designed to accompany a future superconducting radiofrequency Paul trap for antiprotons, but some of the modules were ... [More](#)

Presented by Anna SOTER

[Simulation studies of a novel, charge sharing, multi-anode MCP detector](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The next generation Ring Imaging Cherenkov (RICH) detectors for particle ID applications, at CERN, PANDA, and others place stringent requirements on photon detectors, with potentially high magnetic fields unaligned with the detector's optical axis, high event rates challenging detector lifetime, high density multi-anode readout and a high time resolution requirement typically less than 50 ps. ... [More](#)

Presented by Thomas CONNEELY

[Simulations of Inter-Strip Capacitance and Resistance for the Design of the CMS Tracker Upgrade](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

An upgrade of the LHC accelerator, the high luminosity phase of the LHC is foreseen for 2023. The tracking system of the CMS experiment at HL-LHC will face an intenser radiation environment than the present system was designed for. This requires an upgrade of the full tracker, which will be equipped with higher granularity as well as radiation harder sensors, which can withstand higher radiat ... [More](#)

Presented by Thomas EICHHORN

[Software triggering in the XENON1T DAQ](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The XENON1T will soon be the world's largest and most-sensitive dark matter experiment. Dark-matter particles would be detected by their interaction with 2.2 tonnes of liquid xenon viewed by approximately 250 PMTs. In order to calibrate our detector, we must use radioactive sources that will result in roughly 300 MB/s of data coming from the flash ADC boards connected to our PMTs. An overview of o ... [More](#)

Presented by Dr. Christopher TUNNELL

[Strip readout MRPC for the TOF System of the MPD/NICA Experiment.](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

Multigap resistive plate chambers have proven to be the best choice for time-of-flight systems of large experiments such as ALICE, STAR, PHENIX. In the MPD experiment aimed at the study of hot and dense baryonic matter it has been also decided to use MRPCs. To reduce the number of TOF system channels it is advisable to use readout from each end of a strip. Several different prototypes of detectors ... [More](#)

Presented by Vadim BABKIN

[TIGER – A Fast Trigger Processor based on Sampling ADCs and Real-Time Feature Extraction](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

For the upcoming measurements of deeply virtual Compton scattering at the COMPASS-II experiment at CERN/SPS we have developed a modular high speed (1GS/s) and high resolution (>10.5 effective bits) sampling ADC module, which allows for trigger decisions based on digital comparisons of signal amplitudes, coincidence times and geometric conditions. Featuring digital pulse processing in real-time to ... [More](#)

Presented by Prof. Horst FISCHER

[Test for the mitigation of the Single Event Upset for ASIC in 130 nm technology](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The Micro Vertex Detector (MVD) is the innermost sensitive layer of the PANDA experiment at the new Facility for Antiproton and Ion Research (Fair). The MVD will be composed of two kind of sensors: hybrid pixels and double sided strips. The front end

electronics of the MVD will be placed at a few centimetres from the interaction point, where high radiation levels are expected. Therefore the A ... [More](#)

Presented by Paolo DE REMIGIS

[The AMC 13 Project](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

The AMC13 provides clock, timing and DAQ service for many subdetectors in the CMS experiment at CERN, as well as the muon g-2 experiment at Fermilab. The module hardware was recently upgraded to support 10 gigabit optical fiber and backplane interfaces. New firmware is now under development to support arbitrarily large event fragments from 12 AMC cards with up to 3 simultaneous output link ... [More](#)

Presented by Eric Shearer HAZEN

[The AMC13XG: A New Generation Clock/Timing/DAQ Module for CMS MicroTCA](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The AMC13 provides clock, timing and DAQ service for many subdetectors in the CMS experiment at CERN, as well as the muon g-2 experiment at Fermilab. The module hardware was recently upgraded to support 10 gigabit optical fiber and backplane interfaces. New firmware is now under development to support arbitrarily large event fragments from 12 AMC cards with up to 3 simultaneous output links ... [More](#)

Presented by Eric Shearer HAZEN, David ZOU

[The ATLAS New Small Wheel Upgrade Project](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The luminosity upgrade of the Large Hadron Collider at CERN foresees a luminosity increase by a factor 5 compared to the LHC. To cope with the corresponding rate increase, the ATLAS detector needs to be upgraded. The upgrade will proceed in two steps: Phase I in the LHC shutdown 2018/19 and Phase II in 2023-25. The largest of the ATLAS Phase-1 upgrades concerns the replacement of the first muon ... [More](#)

Presented by Theodoros ALEXOPOULOS

[The ATLAS Tau Trigger for Run2 of the LHC](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

In the Run 2 of the Large Hadron Collider, the strategies for triggering will become more important than ever for physics analyses. The ATLAS tau trigger system combines information from the tracking and calorimetry detectors to identify the signature of tau lepton hadronic decays. Under the demanding, high luminosity environment of Run 2 at the LHC experiment (with instantaneous luminosities as high as ... [More](#)

Presented by Petar Kevin RADOS

[The Atlas SCT operation and performance](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

We report on the operation and performance of the ATLAS Semi-Conductor Tracker (SCT), which has been functioning for 3 years at the Large Hadron Collider at CERN. The SCT is constructed of 4088 silicon detector modules. We find 99% of the 6.3 million strips are operational, the noise occupancy and hit efficiency exceed the design specifications; the alignment is very close to the ideal to allow on ... [More](#)

Presented by Semi conductor tracker ATLAS SCT COLLABORATION

[The CALICE Digital Hadron Calorimeter: Calibration and Response to Pions and Positrons](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The large CALICE Digital Hadron Calorimeter prototype (DHCAL) was built in 2009 - 2010 and was tested in the Fermilab and CERN test beams. The DHCAL uses Resistive Plate Chambers (RPCs) as active media and is read out with 1 x 1 cm² pads and digital (or 1 -

bit) resolution. With a world record of nearly 480k readout channels, the DHCAL offers the possibility to study hadronic interactions with unp ... [More](#)

Presented by Burak BILKI

[The CMS Central Hadron Calorimeter DAO System Upgrade](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The CMS central hadron calorimeters will undergo a complete replacement of their data acquisition system electronics. The replacement is phased, with portions of the replacement starting in 2014 and continuing through LHC Long Shutdown 2 in 2018. The existing VME electronics will be replaced with a μ TCA based system. New on-detector QIE electronics cards will be transmit data at 4.8 GHz to t ... [More](#)

Presented by Prof. Jeremy MANS

[The CMS Central Hadron Calorimeter Upgrade](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The CMS central hadron calorimeters will undergo an extensive upgrade before LHC Run 3 which will occur in 2019. The upgrade is based on replacement of the current HPD with SIPMs read out into a new ADC, the QIE11. Longitudinal segmentation of the HCAL will be increased by about 3X depending on eta. The entire front and back end electronics will be replaced with a 3X higher bandwidth syste ... [More](#)

Presented by Jim FREEMAN

[The CMS calorimeter trigger upgrade for the LHC Run II](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The CMS experiment implements a sophisticated two-level online selection system that achieves a rejection factor of nearly $10e5$. The first level (L1) is based on coarse information coming from the calorimeters and the muon detectors while the High-Level Trigger combines fine-grain information from all sub-detectors. During Run II, the LHC will increase its centre of mass energy up to 13 TeV and pr ... [More](#)

Presented by Mr. Alexandre ZABI

[The CMS electromagnetic calorimeter barrel upgrade for High-Luminosity LHC](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The High Luminosity LHC (HL-LHC) will provide unprecedented instantaneous and integrated luminosity. The lead tungstate crystals forming the barrel part of the CMS Electromagnetic Calorimeter (ECAL) will still perform well, even after the expected 3000 fb⁻¹ at the end of HL-LHC. The avalanche photodiodes (APDs) used to detect the scintillation light have recently been exposed to the levels of radi ... [More](#)

Presented by Michael PLANER

[The CMS electromagnetic calorimeter barrel upgrade for High-Luminosity LHC](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The High Luminosity LHC (HL-LHC) will provide unprecedented instantaneous and integrated luminosity. The lead tungstate crystals forming the barrel part of the CMS Electromagnetic Calorimeter (ECAL) will still perform well, even after the expected 3000 fb⁻¹ at the end of HL-LHC. The avalanche photodiodes (APDs) used to detect the scintillation light have recently been exposed to the levels of radi ... [More](#)

Presented by Michael PLANER

[The Central Logic Board for the optical module of the KM3NeT detector](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

The KM3NeT deep sea neutrino observatory will include a very large number of multi-Photomultiplier (PMT) optical modules (DOM) to detect the Cherenkov light generated by secondary particles produced in neutrino interactions. The Central Logic Board (CLB) has

been developed to acquire timing and amplitude information from the PMT signals, implementing time-to-digital conversion (TDC) with ti ... [More](#)

Presented by Paolo MUSICO

[The Data Acquisition System for the ANAIS experiment](#)

Type: Poster Track: Experiments: 2d) Dark Matter Detectors

ANAIS (Annual modulation with NAI Scintillators) experiment will look for dark matter annual modulation with 250 Kg of ultrapure NaI scintillators at the Canfranc Underground Laboratory (LSC). The detector will consist of 20 close-packed single modules, each of them coupled to two photomultipliers (PMTs) working in coincidence. An electronic chain and data acquisition system (DAQ) have been devel ... [More](#)

Presented by Miguel Angel OLIVAN

[The Enriched Xenon Observatory \(EXO\) for Double Beta Decay](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

The Enriched Xenon Observatory (EXO) is an experimental program designed to search for the neutrinoless double beta decay of Xe-136. Observation of this decay would determine an absolute mass scale for neutrinos, prove that neutrinos are massive Majorana particles (i.e. they are their own anti-particles), and constitute physics beyond the Standard Model. The first phase experiment called EXO-200 ... [More](#)

Presented by Dr. Lisa KAUFMAN

[The Frugal Tile: A 20-cm-square MCP-PMT Module Comprising 8 Glass Parts](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

We present the design for the 'Frugal Tile', an all-glass MCP-PMT with an active area of 400 square centimeters. The LAPPD glass tile module was designed to be simple, with: a) a hermetic package made of top and bottom plates and a rectangular sidewall, each made of water-jet-cut plate glass; b) an internal stack consisting of 2 glass capillary plates functionalized with Atomic Layer Deposit ... [More](#)

Presented by Henry J. FRISCH

[The GAP Project - GPU for Realtime Applications in High Level Trigger and Medical Imaging](#)

Type: Poster Track: Technology transfer: 5b) Health and healthcare

The aim of the GAP project is the deployment of Graphic Processing Units (GPUs) in real-time applications, ranging from online event selection (trigger) in high energy physics (HEP) experiments to medical imaging reconstruction. The final goal of the project is to demonstrate that GPUs have a positive impact in sectors different for rate, bandwidth, and computational intensity. The relevant aspe ... [More](#)

Presented by Massimiliano FIORINI

[The Liquid Argon Purity Demonstrator at Fermilab](#)

Type: Poster Track: Experiments: 2c) Detectors for neutrino physics

Fermilab has an extensive program of research and development for liquid argon detectors encompassing purification and cryogenics, readout electronics, photon detection and high voltage. The current status and future plans of this program will be presented, with an emphasis on recent results from the Liquid Argon Purity Demonstrator (LAPD). Removing electronegative impurities from liq ... [More](#)

Presented by Michelle STANCARI

[The MINOS micromegas-TPC vertex tracker for in-beam spectroscopy of very exotic nuclei](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

CEA-Irfu developed a new device, called MINOS (MagIc Numbers Off Stability), to improve both the luminosity and the sensitivity of proton-induced knockout reactions

experiments performing in-beam spectroscopy of very exotic nuclei produced at fragmentation facilities (such as RIBF at RIKEN in Japan and FAIR in Germany). Its innovative approach is that it uses a compact annular 300 mm long Time Pro ... [More](#)

Presented by Dr. Alain DELBART

[The MOLLER experiment: A measurement of the Weak charge of the electron, using current mode electron detectors in a high radiation environment.](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The MOLLER collaboration is currently preparing an experiment to measure the Weak charge of the electron to a fractional accuracy of 2.3% at very low momentum transfer, using parity violating electron scattering. At this precision, the experiment will be sensitive to the interference of the electromagnetic amplitude with new neutral current amplitudes as weak as $10^{-3} \cdot G_F$. The experimen ... [More](#)

Presented by Michael GERICKE

[The NA62 LAV front-end electronics and the LO trigger generating firmware](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The aim of the NA62 experiment is to measure the BR($K^+ \rightarrow \pi^+ \nu \bar{\nu}$) to within about 10%. The large-angle photon vetoes (LAVs) must detect particles with better than 1 ns time resolution and 10% energy resolution over a very large energy range in order to reject the dominant background. A low threshold, large dynamic range, Time-over-threshold based solution has been developed for the LAV fr ... [More](#)

Presented by Dr. Francesco GONNELLA

[The R&D of the GEM Detector Based on NS2 Technology](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

NS2 technology is a newly developed self-stretch technology for the construction of the large area gas electron multiplier (GEM) detector. Using the NS2 technology, we have built a 30cm×30cm GEM detector. This R&D work includes the mechanical design for detector frames and test setup. The detector is assembled and tested in the state key laboratory of particle detection and electronics at USTC, a ... [More](#)

Presented by Mr. Yi ZHOU, cheng LI, Mr. Wenhao YOU

[The RICH detector of the NA62 experiment at CERN](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

NA62 is the last generation kaon experiment at CERN. Its main goal is to measure the branching ratio of the ultra-rare decay $K^+ \rightarrow \pi^+ \bar{\nu} \nu$ with 10% accuracy and background contamination at the 10% level. Given the tiny branching ratio of this decay, $O(10E-10)$, to fulfil such request the main background process $K^+ \rightarrow \mu^+ \nu$ (BR ~63%) must be suppressed by a rejection factor of $4 \times 10E-13$. This is acc ... [More](#)

Presented by Giuseppina ANZIVINO

[The Setup of High Efficiency AMOC Spectrometer](#)

Type: Poster Track: Sensors: 1e) Novel technologies

Positron lifetime - momentum correlation spectrometer (AMOC) is a important method to analyze material structures using positron annihilation technology. However a key problem of low count rates need to be tackled. A novel geometry and scintillator architectures with the AMOC spectrometer is designed to promote the spectrometer count rates. A well-shape BaF2 scintillator is employed to detect ... [More](#)

Presented by Dr. Bin CHENG

[The Silicon Strip Upgrade Tracker for the LHCb Upgrade](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The LHCb upgrade requires replacing the silicon strip tracker between the vertex locator and the magnet. A new design has been developed and tested based on the "stave"

concept planned for the ATLAS upgrade. We will describe the new detector being constructed and show its improved performance in charged particle tracking.

Presented by Marina ARTUSO

[The upside-down structure for X-ray imaging](#)

Type: Poster Track: Sensors: 1b) Semiconductor Detectors

Typical in-direct X-ray image sensor have used a upper scientillator, which is like CsI(Tl) or Gd₂O₂S. In soft X-ray imaging for mammography, most of X-ray Energy is absorbed a surface of scientillator. Thus, MTF and sensitivity of image sensor can be decreased. In our study, we adapted a upside-down structure, which has bottom sided scientillator of image sensor. In MCNP and LightTools simulation ... [More](#)

Presented by Mr. Kim MYUNGSOO, DONG-UK KANG, Daehee LEE

[Thermal neutron detector development at the Reactor Intitute Delft](#)

Type: Poster Session: [I.e Novel Technologies](#)

Track: Sensors: 1e) Novel technologies

We present the Delft initiatives in thermal neutron detection, a field that has been dominated by 3-He gaseous detectors. Our developments will be tested at the research reactor of the TU Delft, but the group also designs and builds instruments for partner institutes like ISIS, UK and the future European Spallation Source in Sweden. In this framework we present our collaborations on high-resolutio ... [More](#)

Presented by Serge DUARTE PINTO

[Topology in the future ATLAS Level-1 Trigger](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

ATLAS is an experiment on the Large Hadron Collider (LHC), located at the European Organization for Nuclear Research (CERN) in Switzerland. By 2015 the LHC instantaneous luminosity will be increased from 10^{34} up to $3 \cdot 10^{34}$ cm⁻² s⁻¹. This places stringent operational and physical requirements on the ATLAS Trigger in order to reduce the 40MHz collision rate to a manageable even ... [More](#)

Presented by Christian KAHRA

[Tracker alignment validation in CMS using electrons](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The tracker of CMS experiment is composed at one hundred percent of silicon detectors. They are arranged in successive layers of concentric cylinders around the beam axis, in the central part of CMS detector, and in disks perpendicular to the beam axis, in the forward and backward part of the detector. The whole has the shape of a cylinder of 110 cm radius and 540 cm length. The silicon detectors ... [More](#)

Presented by Christophe GOETZMANN

[Upgrade of the CMS Global Muon Trigger](#)

Type: Poster Track: Data-processing: 3b) Trigger and Data Acquisition Systems

The increase in center-of-mass energy and luminosity for Run 2 of the Large Hadron Collider pose new challenges for the trigger systems of the experiments. To keep triggering with a similar performance as in Run 1, the CMS muon trigger is currently being upgraded. The new algorithms will provide higher resolution, especially for the muon transverse momentum and will make use of isolation criteria ... [More](#)

Presented by Joschka LINGEMANN

[Upgrade of the LHCb calorimeters](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The LHCb collaboration foresees a major upgrade of the detector for the high luminosity run that will take place after the LS2 shut-down. Apart from the increase of the instantaneous luminosity at the interaction point of the experiment, one of the major

ingredients of this upgrade is a full readout at 40MHz of the sub-detectors and the acquisition of the data by a large farm of PC. The trigger wi ... [More](#)

Presented by Frederic MACHEFERT

[Upgraded Fast Beam Conditions Monitor for CMS online luminosity measurement](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

The CMS beam and radiation monitoring subsystem BCM1F during LHC Run I consisted of 8 individual diamond sensors situated around the beam pipe within the tracker detector volume, for the purpose of fast monitoring of beam background and collision products. Effort is ongoing to develop the use of BCM1F as an online bunch-by-bunch luminosity monitor. BCM1F will be running whenever there is beam in L ... [More](#)

Presented by Jessica Lynn LEONARD

[Upgraded readout and trigger electronics for the ATLAS liquid argon calorimeters for future LHC running](#)

Type: Poster Track: Sensors: 1a) Calorimetry

The ATLAS Liquid Argon (LAr) calorimeters produce almost 200K signals that must be digitized and processed by the front-end and back-end electronics at every triggered event. Additionally, the front-end electronics sums analog signals to provide coarse-grained energy sums to the first-level (L1) trigger system. The current design was optimized for the nominal LHC luminosity of $10^{34} \text{ cm}^{-2} \text{ s}^{-1}$... [More](#)

Presented by Takashi YAMANAKA

[Very low energy electron tracking and positioning based on THGEM](#)

Type: Poster Track: Sensors: 1c) Gaseous Detectors

A new type of THGEM was developed for applications requiring relative high spacial resolution $< 200 \text{ um}$, which can be achieved by THGEM with 150 um hole diameter, 400 um pitch, and 150 um thickness, and even smaller hole array structure. A THGEM-TPC is designed to monitor 3 - 50 MeV pulsed electron beam online. And a THGEM-based 2D detector is designed to measure the incident positions of $0.1 - 3 \text{ MeV}$... [More](#)

Presented by Dr. Yuguang XIE

[feasibility study of a 3-inch Vacuum Silicon Photo Multiplier Tube](#)

Type: Poster Track: Sensors: 1d) Photon Detectors

The Vacuum Silicon PhotoMultiplier Tube (VSIPMT) is an innovative design that we proposed for the first time at the 11th Topical Seminar on Innovative Particle and Radiation Detectors (IPRD08) in Siena, triggering deep discussions on the feasibility of the device itself and on the convenience of such an idea. The basic idea is to replace the classical dynode chain of a PMT with a SiPM, which acts ... [More](#)

Presented by Carlos Maximiliano MOLLO

[mesh2gdml: Importing CAD geometries into Geant4](#)

Type: Poster Track: Sensors: 1e) Novel technologies

Geant4 is the de facto HEP standard for simulating the interaction of particles with materials and fields. The software toolkit provides a very rich library of basic geometrical shapes, often referred to as "primitives", plus the ability to define compound geometries, making it capable of supporting extremely complex physical structures. Current versions of Geant4 fully and natively support an ... [More](#)

Presented by Norman Anthony GRAF

[org.lcsim: A Java-based tracking toolkit](#)

Type: Poster Track: Experiments: 2a) Experiments & Upgrades

We describe a software toolkit for full event simulation and reconstruction in silicon tracking detectors. It features modular packages providing sophisticated simulations of the response of silicon detectors to the passage of charged particles. Sensor classes allow

very detailed descriptions of charge carrier movement in silicon detectors: one can list the collecting, absorbing and reflecting reg ... [More](#)

Presented by Norman Anthony GRAF

[performance of 2nd generation CALICE ASICs \(HARDROC, MICROROC, SKIROC & SPIROC\)](#)

Type: Poster Track: Sensors: 1a) Calorimetry

In the framework of CALICE, EUDET and AIDA programs, technological prototypes for ILC calorimetry have been developed. They rely on highly integrated readout ASICs to perform signal readout, auto-trigger and energy measurement over several millions of channels. Ultra-low power is achieved thanks to power pulsing, which must maintain calorimetric performance. The chips developed for th ... [More](#)

Presented by Mr. Ludovic RAUX

[the study of the sampling readout electronics of MRPC](#)

Type: Poster Track: Data-processing: 3a) Front-end Electronics

This post is to introduce the study of the electronics design for the upgrade of the Endcap TOF of BESIII. MRPC will be used as the main detector unit. Two methods were studied. The first one is to use NINO and HPTDC, which have already been used in ALICE. And the second one is to use a self-designed ASIC with TOT function and use sampling chip to get the waveform to calculate the time and char ... [More](#)

Presented by Prof. Xiaoshan JIANG

[zig-zagging CO2 evaporation cooling system R&D](#)

Type: Poster Track: Emerging technologies: 4a) Cooling and cryogenics

Design, prototype production and thermal test of a new cooling system for the Upgrade of the UT Tracker for LHCb, based on vertical not straight CO2 boiling channels at about -30 °C.

Presented by Simone COELLI