4th Beam Telescopes and Test Beams Workshop 2016

Report of Contributions

https://indico.desy.de/e/bttb4

Contribution ID: **0** Type: **not specified**

The EUDET-type telescope family (incl. EUDAQ)

Wednesday 3 February 2016 14:40 (20 minutes)

This talk will give an overview about the EUDET-type telescopes and its user infrastructure. Hardware components and DUT integration will be presented. Furthermore, a EUDAQ status will be shown as well as ongoing development.

Primary author: Dr DREYLING-ESCHWEILER, Jan (DESY)

Presenter: Dr DREYLING-ESCHWEILER, Jan (DESY)

Session Classification: Beam telescopes

Contribution ID: **1** Type: **not specified**

Status of Caladium at SLAC

Wednesday 3 February 2016 16:50 (20 minutes)

In 2015 the Caladium silicon telescope of Carleton University, Canada was loaned to SLAC and installed at the End Station Test Beam facility (ESTB). Caladium is a member of the EUDET/AIDA beam telescopes family and is now available to Users at SLAC. We will present the available infrastructure, DAQ, cooling, moving stages, etc. as well as first results of our commissioning runs.

Primary author: Dr HAST, Carsten (SLAC National Accelerator Laboratory)

Presenter: Dr HAST, Carsten (SLAC National Accelerator Laboratory)

Session Classification: Test beam facilities

Contribution ID: **2** Type: **not specified**

Intrinsic resolution studies with the DATURA telescope

Friday 5 February 2016 11:30 (20 minutes)

The intrinsic resolution of the MIMOSA26 sensors used in the DATURA beam telescope are extracted deploying an iterative method using GBL track fits. The data was taken at the DESY-II test beam facilities. Additionally, the applicability of the Highland formula to electron beams is tested against data.

Primary author: Dr JANSEN, Hendrik (DESY)

Presenter: Dr JANSEN, Hendrik (DESY)

Session Classification: Data analysis

Contribution ID: **3** Type: **not specified**

Beam tests of pixel-detector prototypes for the CLIC vertex detector

Thursday 4 February 2016 09:20 (20 minutes)

Hybrid pixel-detector prototypes with small pitch (25-55 microns) and thin sensors (50-300 microns) are currently under study for the vertex detector at the proposed high-energy CLIC electron-positron collider. Test-beam campaigns with hybrid assemblies of planar and active HV-CMOS sensors on CLICpix ASICs and with active edge sensors on Timepix3 ASICs have been performed at the CERN SPS H6 beam line using the Mimosa-based AIDA telescope with rolling-shutter readout as well as a new Timepix3-based telescope with data-driven readout. The performance of the assemblies is evaluated for different operating conditions (bias voltage, detection threshold, rotation angle). We present the status of the reconstruction, alignment and subsequent data analysis. Emphasis will be put on the discussion of a new event model adapted to the data-driven readout scheme of the Timepix3 telescope.

Primary author: Dr NÜRNBERG, Andreas (CERN)

Presenter: Dr NÜRNBERG, Andreas (CERN)

Session Classification: Data analysis

Contribution ID: **4** Type: **not specified**

The CLICpix Timepix3 telescope

Wednesday 3 February 2016 09:30 (20 minutes)

The vertex- and tracking detectors at the proposed high-energy CLIC electron-positron collider will be based on small-pitch silicon pixel- or strip detectors. Time stamping with an accuracy of approximately 10 ns is required to suppress hits from beam-induced backgrounds. Tests with particle beams are needed to assess the performance of existing and future prototype assemblies. To this end a high-resolution beam telescope based on Timepix3 hybrid pixel-detector assemblies has been constructed and successfully commissioned in the H6 beam line of the CERN SPS. It allows for track reconstruction at high particle rates (data driven readout with up to 10 million tracks / second) and with excellent spatial (~2 microns) and temporal (~1 ns) resolution. The readout system follows the LHCb Timepix3 telescope architecture based on SPIDR boards and Xilinx Virtex-7 FPGAs. We present the telescope hardware and its readout architecture, as well as the concept for integration of devices under test based on EUDAQ producers. First telescope commissioning results will also be shown.

Primary author: Dr FIERGOLSKI, Adrian (CERN)

Presenter: Dr FIERGOLSKI, Adrian (CERN)

Session Classification: Beam telescopes

Contribution ID: **5** Type: **not specified**

Performance and Results from the MuPix Telescope

Wednesday 3 February 2016 09:50 (20 minutes)

This talk will give an overview over the MuPix Telescope. After a short introduction, the results from the Mu3e MuPix testbeam campaigns 2015, covering the DESY II, SPS and PSI tetsbeams, focusing on efficiency measurements are presented.

Primary author: Mr HUTH, Lennart (PI Uni Heidelberg - mu3e)

Presenter: Mr HUTH, Lennart (PI Uni Heidelberg - mu3e)

Session Classification: Beam telescopes

Contribution ID: **6** Type: **not specified**

Ljubljana JSI TRIGA Reactor

Wednesday 3 February 2016 11:00 (20 minutes)

The upgrade scenario of the LHC to a luminosity of 1035 cm-2 represents a challenge for development of detector components as well as for their tests after irradiations under realistic conditions. Fluences of fast hadrons above 1016 cm-2 are expected in the most exposed regions of detectors. Spectra of particles cover a wide range with energies up to tens of GeV.
Irradiation facilities cannot exactly reproduce these spectra therefore it is important to make irradiations with different particles and energies to understand the damage mechanism in detectors. Triga Mark II reactor at Jožef Stefan Insitute in Ljubljana has been widely used as irradiation facility in last two decades mainly to study damage caused by nonionizing energy loss (NIEL) in variety of materials. Irradiations are done by insertion of samples directly into the reactor core. Good knowledge of spectrum of neutrons which covers energies from thermal to several MeV is important for evaluation of NIEL equivalent fluences. For example only fast neutrons with energies larger than 100 keV contribute significantly to the NIEL in silicon, the contribution of slower (thermal, epithermal) is only about 1 %.
Reactor is available for irradiations in the framework of AIDA2020 transnational access program. Description of irradiation channels, their limitations and support infrastructures will be described in the presentation

Primary author: Dr CINDRO, Vladimir (Jožef Stefan Institute)

Presenter: Dr CINDRO, Vladimir (Jožef Stefan Institute)

Session Classification: Irradiation facilities

Contribution ID: **7** Type: **not specified**

KarTel - Ljubljana telescope based on M26 sensors.

Wednesday 3 February 2016 15:00 (20 minutes)

I will present KarTel, a telescope build in Ljubljana and based on Mimosa 26 sensors.
As an illustration of KarTel operation - a novel method will be presented that can be used to investigate the properties of silicon and CVD diamond detectors for High Energy Physics experiments. The method is similar to the already well established E-TCT technique using laser beam. In the proposed method the beam of high energy hadrons (MIPs) is used instead of laser beam. MIPs incident on the detector in the direction parallel to the readout electrode plane and perpendicular to the edge of the detector. Such experiment could prove very useful to study CVD diamond detectors which are almost inaccessible for the E-TCT measurements with laser due to large band-gap as well as to verify and complement the E-TCT measurements of silicon.

The method proposed is being tested at CERN in a beam of 120GeV hadrons using a KarTel telescope based on Mimosa 26 sensors with track resolution at the DUT of few μm. MIPs passing trough 6 planes of the reference telescope with the DUT detector in the middle are triggered by 2 scintillators. The preliminary results of the measurements will be presented.

Primary author: Dr GORISEK, Andrej (J. Stefan Institute, Ljubljana)

Presenter: Dr GORISEK, Andrej (J. Stefan Institute, Ljubljana)

Session Classification: Beam telescopes

Contribution ID: **8** Type: **not specified**

HV-MAPS Tracking Telescope: Fast Data Transfer with Direct Memory Access

Wednesday 3 February 2016 10:10 (20 minutes)

In the context of the Mu3e experiment, High Voltage Monolithic Active Pixel
Sensors (HV-MAPS) are developed as constituents of a highly efficient tracking
detector with good momentum, vertex and timing resolution. The MuPix HV-MAPS prototypes were arranged in a telescope setup
with four layers as an integration test and for efficiency measurements. For high-rate data taking, fast data transfer
is required. Therefore, data transmission via Direct Memory Access (DMA) has been implemented and was tested at a beam test at DESY (Hamburg).
In addition, efficiencies were calculated from straight tracks reconstructed online on a graphics processing unit (GPU).
This talk introduces the readout scheme of the MuPix telescope and focusses on the DMA implementation and the GPU track reconstruction.

Primary author: Ms VOM BRUCH, Dorothea (Johannes Gutenberg-Universität Mainz)

Presenter: Ms VOM BRUCH, Dorothea (Johannes Gutenberg-Universität Mainz)

Session Classification: Beam telescopes

Contribution ID: **9** Type: **not specified**

Irradiation facilities at KIT

Wednesday 3 February 2016 11:40 (20 minutes)

At KIT we conduct irradiations with 23MeV protons and X-rays. We present the facilities, irradiation procedures and how to apply. Few examples of performed irradiations will be show as well.

Primary author: Dr DIERLAMM, Alexander (Karlsruher Institut für Technologie)

Presenter: Dr DIERLAMM, Alexander (Karlsruher Institut für Technologie)

Session Classification: Irradiation facilities

Contribution ID: **10** Type: **not specified**

A comparative sensor testbeam using micro-focused X-rays

Friday 5 February 2016 11:10 (20 minutes)

A micro-focused (2.5um spot size) 15keV X ray beam has been used to study silicon micro-strip and pixelated detectors that utilise reduced edge or edgeless designs.

Scans were taken across the physical edges of devices to measure the charge collection as well as study the electric field line behaviour.

We will show the methods used for alignment, DAQ integration, triggering and data analysis.

Results will also be shown involving pixel sensors with a range of bulk type (n-on-n & n-on-p) and detector thickness's (100, 150 & 300um), as well as proton irradiated strip sensors (up to 5x1015ncm-2).

These results indicate the use of micro focused X-rays is a valid complimentary beam test for particle detector characterisation

Primary author: Dr BLUE, Andy (Univesrity of Glasgow)

Presenter: Dr BLUE, Andy (Univesrity of Glasgow)

Session Classification: Data analysis

Contribution ID: **11** Type: **not specified**

ATLAS ITk UK Pixel Sensors

Thursday 4 February 2016 09:00 (20 minutes)

The UK has produced a number of pixel sensors based on the FEI4b chip for ATLAS ITk. These sensors vary in pixel dimension and coupling technology. This talk will present progress in characterising these devices, including a comparison of pixel geometries based on cluster parameters and resolution at CERN and DESY testbeams.

Primary author: Dr WRAIGHT, Kenneth (University of Glasgow)

Presenter: Dr WRAIGHT, Kenneth (University of Glasgow)

Session Classification: Data analysis

Contribution ID: **12** Type: **not specified**

Characterization of thin irradiated epitaxial silicon sensors for the CMS phase II pixel upgrade

Friday 5 February 2016 12:10 (20 minutes)

The high-luminosity upgrade of the Large Hadron Collider, foreseen for 2025, necessitates the replacement of the tracker of the CMS experiment. The innermost layer of the new pixel detector will be exposed to severe radiation corresponding to a 1 MeV neutron equivalent fluence up to Φ eq = 2 ·10 16 cm −2 and an ionizing dose of ≈ 10 MGy after an integrated luminosity of 3000 fb −1 . Silicon crystals grown with different methods and sensor designs are under investigation in order to optimize the sensors for such high fluences. Thin planar silicon sensors are good candidates to achieve this goal, since the degradation of the signal produced by traversing particles is less severe than for thicker devices.
Epitaxial pad diodes and strip sensors irradiated up to fluences of Φ eq = 1.3·10 16 cm −2 have been characterized in laboratory measurements and beam tests at the DESY II facility. The active thickness of the strip sensors and pad diodes is 100 µm. In addition, strip sensors produced using other growth techniques with a thickness of 200 µm have been studied.
As the noise of the sensors increases with the accumulated fluence, the track information provided by the beam telescope is used to improve the separation of signal and noise in the strip sensors measurements, hereby improving the spectra of the collected charge. In this talk, the results obtained for p-bulk sensors are shown.

Primary author: Mr CENTIS VIGNALI, Matteo (University of Hamburg)

Presenter: Mr CENTIS VIGNALI, Matteo (University of Hamburg)

Session Classification: Data analysis

Contribution ID: **13** Type: **not specified**

Beam tests for the ATLAS ITk strip upgrade

Friday 5 February 2016 10:00 (20 minutes)

The Silicon strip detector will form one component of the ATLAS Integrated Tracker upgrade for the High-Luminosity LHC. Recent tests of the prototype sensors and electronics have been performed at the DESY II testbeam, using the DURANTA telescope with an additional pixel layer to improve timing resolution. Results will be shown on the tracking performance using the Generalized Broken Lines algorithm, along with results of the gain measurements of the readout electronics.

Primary author: KELLER, John (DESY)

Presenter: KELLER, John (DESY)

Session Classification: Data analysis

Contribution ID: **14** Type: **not specified**

The Geneva FE-I4 Telescope

Wednesday 3 February 2016 14:00 (20 minutes)

In 2014 an ATLAS FE-I4 based telescope was built and operated in various CERN PS and SPS test-beams. The 6 plane system consists of IBL like 150um planar pixel sensors (250x50um2 pitch) which are read out by the RCE DAQ system. This ensures fully synchronized data for FE-I4 compatible devices under test. The telescope triggers itself and allows for defining a region of interest, which especially for small DUTs increases the amount of usable data greatly.
In combination with the centrally monitored and controlled DCS, including LV and HV supplies, cooling capabilities and remote DUT positioning via movable stages this forms a fully integrated system for detector characterization.
Multiple ATLAS planar pixel sensors and HVCMOS as well as non-FE-I4 based devices have been successfully characterized over the last two years. A description of the telescope with latest results and upgrade plans will be presented.

Primary author: Mr RISTIC, Branislav (CERN / University of Geneva)

Presenter: Mr RISTIC, Branislav (CERN / University of Geneva)

Session Classification: Beam telescopes

Contribution ID: **15** Type: **not specified**

The EUTelescope Reconstruction Framework

Thursday 4 February 2016 12:30 (20 minutes)

The EUTelescope reconstruction framework will be introduced. Focus is put on recent developments as well as new features which are currently under development.

Primary author: Mr BISANZ, Tobias (Uni Göttingen - ATLAS)

Presenter: Mr BISANZ, Tobias (Uni Göttingen - ATLAS)

Session Classification: Tools

Contribution ID: **16** Type: **not specified**

The TimePix3 Telescope

Wednesday 3 February 2016 09:10 (20 minutes)

The TimePix3 telescope is a high rate, data driven beam telescope being used to study sensor prototypes for the LHCb VErtex LOcator (VELO) upgrade. In addition to VELO prototype sensors, the telescope has been used to study Upstream Tracker (UT), Scintillating Fibre (SciFi), Ring Imaging CHerenkov (RICH), Time-Of-Flight Ring Imaging CHerenkov (TORCH) and Gridpix prototypes. The telescope consists of 8 layers of 300 um p-on-n silicon sensors read out by TimePix3 ASICs. Tracks measured with the telescope have excellent temporal (~1 ns) and spatial resolution (~2 um), and can operate at a rate of up to 10 Mtrack/s. Besides the telescope performance we also present the software framework used in the reconstruction and analysis of the telescope data. This is based on the Gaudi framework used by many HEP experiments including LHCb. The software can reconstruct and analyze ~ 15,000 tracks per second. Alignment and reconstruction are performed automatically on a distributed computing system. The framework allows for flexible integration of detectors from external users via time-stamped triggers. During the 2015 testbeam campaigns, approximately 37 billion tracks were recorded and reconstructed.

Primary author: Mr EVANS, Timothy (CERN)

Presenter: Mr EVANS, Timothy (CERN)

Session Classification: Beam telescopes

Contribution ID: **17** Type: **not specified**

Test beam studies on n-in-p planar pixel sensors

Thursday 4 February 2016 09:40 (20 minutes)

Pixel modules composed by n-in-p sensors interconnected to ATLAS FE-I4 chips and irradiated up to a fluence of 5e15 were measured at testbeam campaigns at DESY and CERN. The AIDA-Telescopes at both sides together with the EuTelescope softwaere were used in order to study the performance after irradiation in terms of hit efficiency of different pixel cell designs. Different resolutions were obtained from the two test beams which will be discussed and compared. Measurements of charge collection at different depths in the pixel sensor bulk have been obtained with the grazing angle technique for n-in-p pixel sensors. This analysis also allows for the determination of hit efficiency with small pixel pitches in the high pseudo-rapidity range of the new pixel systems at HL-LHC. Furthermore not irradiated modules with thin sensors (100 um) were tested with the FEI4-Telescope at CERN and reconstructed with the Judith and EuTelescope software. The results will be discussed and compared.

Primary author: SAVIC, Natascha (MPI)

Co-authors: MACCHIOLO, Anna (MPI); NISIUS, Richard (MPI); TERZO, Stefano (MPI)

Presenter: SAVIC, Natascha (MPI)

Session Classification: Data analysis

Contribution ID: **18** Type: **not specified**

IRRAD: THE NEW 24GeV/c PROTON IRRADIATION FACILITY AT CERN

Wednesday 3 February 2016 11:20 (20 minutes)

The proton and mixed-field irradiation facilities at the CERN PS East Area (known as IRRAD1 and IRRAD2), have been heavily exploited for irradiation of particle detectors, electronic components and materials since 1992. With the increasing demand of irradiation experiments, and in view of the High-Luminosity upgrade of the CERN Large Hadron Collider (HL-LHC), these facilities suffered of a number of unpleasant restrictions such as the space availability, the maximum achievable particle flux and several access constraints. In the framework of the AIDA project, an upgrade of these facilities was carried out during the Long Shutdown 1 (LS1) of the CERN accelerator complex. The new combined East Area IRRADiation facility (EA-IRRAD) was commissioned in October 2014. While the new proton facility (IRRAD) continue to be mainly devoted to the radiation hardness studies for the High Energy Physics community, the new mixed-field facility (CHARM) mainly hosts irradiation experiments for the validation of electronic systems used in CERN accelerators. In this presentation, we describe the new IRRAD proton facility in terms of layout, area equipment and potential for future irradiation experiments.

Primary author: Dr RAVOTTI, Federico (CERN)

Co-authors: Mrs GKOTSE, Blerina (CERN); Mr GORINE, Georgi (CERN); Mr PEZZULLO, Giuseppe (CERN); Mr GLASER, Maurice (CERN); Dr MOLL, Michael (CERN)

Presenter: Dr RAVOTTI, Federico (CERN)

Session Classification: Irradiation facilities

Contribution ID: **19** Type: **not specified**

Re-timing testbeam data

Thursday 4 February 2016 11:10 (20 minutes)

A description of why and how to re-time test beam data, based on limited length timestamps.

Summary

After successful operation of a 2015 test beam at DESY it was found that the recorded data had extra triggers mixed into the DUT data, which introduced an event offset in the EUDAQ data written to disk.
Using raw log files from the DUT DAQ, a re-timing of the available data was performed to best extent, which will be described here. Indications on how to feed appropriate data into the EUDAQ file format will be given, allowing to post-process this re-timing from EUDAQ files only in the future.

Primary authors: Dr SAWYER, Craig Anthony (STFC Rutherford Appleton Laboratory); Dr DOPKE, Jens (STFC Rutherford Appleton Laboratory)

Co-author: Mr CORMIER, Kyle James Read (University of Toronto)

Presenter: Dr DOPKE, Jens (STFC Rutherford Appleton Laboratory)

Session Classification: Tools

Contribution ID: **20** Type: **not specified**

High rate pixel telescope.

Wednesday 3 February 2016 14:20 (20 minutes)

We present the design, the commissioning, and the performance of a modular pixel telescope, which was equipped with the CMS PSI46v2 pixel chip. The telescope was designed with a primary goal of testing pad and pixel diamond detectors in the high flux beam line at the High Intensity Proton Accelerator in PSI. This beam line is able to provide intensities up to 10 MHz/cm2. The unique features of the PSI46v2 chip are its ability to provide a fast trigger and its ability to scale down the trigger area to the size of the device under test (DUT). The main module of the telescope is based on the motherboard, which accepts up to 3 pixel planes. Several motherboards can be combined into a single telescope read out by a single test board. In the beam test the telescope was used in a configuration with two front and two back planes, where the DUT was placed in between the front and the back modules. The same motherboard can be used to accommodate other versions of the PSI46 chip, for example, the low threshold PSI46dig chip, which was used as DUT. The low threshold of the PSI46dig chip makes it suitable for studying sensors with low signals. In another configuration the telescope was used to test two diamond pad detectors. The telescope DAQ is based on the EUDAQ framework, with a specially added feature to monitor both the performance of the telescope and of the DUTs.

Primary authors: Dr HITS, Dmitry (ETHZ); Mr BACHMAIR, Felix (ETHZ); Mr REICHMANN, Michael (ETHZ)

Presenter: Mr REICHMANN, Michael (ETHZ)

Session Classification: Beam telescopes

Contribution ID: **21** Type: **not specified**

Sensor Developments for the LHCb VELO Upgrade

Friday 5 February 2016 12:30 (20 minutes)

The upgrade of the LHCb experiment, planned for 2019, will transform the experiment to a trigger-less system reading out the full detector at the LHC collision rate and up to $2 \times 10^{33} cm^{-2} s^{-1}$ instantaneous luminosity.

The Vertex Locator (VELO) is the silicon detector surrounding the interaction region. The upgraded VELO is based on a hybrid pixel system equipped with data driven electronics and designed to withstand a radiation dose up to 370 MRad or 8×10^{15} 1 MeV n_{eq} $cm^{-2}.The detector will be composed of silicon pixel sensors with 55 \times 55 \mu ^2$ pitch, read out by the VeloPix ASIC which is being developed based on the TimePix/MediPix family. The VeloPix is capable of reading out up to 800 million hits per second. An additional challenge is the non uniform nature of the radiation damage, which results in requiring a guard ring design with excellent high voltage control. The performance of the prototype sensors has been investigated in a testbeam in which a dedicated telescope system was created with two arms each equipped with 4 Timepix3 assemblies. The device to be tested can be mounted, rotated, and cooled in the central region. This allows several different tests of the performance of the sensor prototypes before and after irradiation.

In this presentation a collection of preliminary results will be shown, as well as a comparison of the performance of the different sensor prototypes produced by Micron semiconductors and Hamamatsu photonics. The evaluation programme of the prototypes also includes studies to show the effects of radiation damage. The sensors were irradiated at several facilities, including: JSI reactor neutrons in Ljubliana, mid energy (27 MeV) protons at KIT in Karlsruhe and high energy (24 GeV) protons from IRRAD at CERN.

Primary author: Ms DALL'OCCO, Elena (NIKHEF)

Presenter: Ms DALL'OCCO, Elena (NIKHEF)

Session Classification: Data analysis

Contribution ID: **22** Type: **not specified**

Allpix, a Generic Monte-Carlo framework for pixel detector simulation

Thursday 4 February 2016 11:30 (20 minutes)

Allpix is a Monte-Carlo simulation framework for pixel detector based on GEANT4. It allow for the user to easily define simulation scenario for all kind of geometry from the more complex to the most simple. Validated detector models for multiple detector are provided along with useful simulation models for the calculation of important quantities such at LET, dE/dX or delta ray production are also provided. In this presentation I will introduce the allpix software and present a few examples of use in single sensor, telescope and full detector simulation.

Primary author: Dr BENOIT, Mathieu (UNIGE)

Presenter: Dr BENOIT, Mathieu (UNIGE)

Session Classification: Tools

Contribution ID: **24** Type: **not specified**

Welcome address

Wednesday 3 February 2016 09:00 (10 minutes)

Contribution ID: **25** Type: **not specified**

Test Beam Measurements for the Upgrade of the CMS Phase I Pixel Detector

Thursday 4 February 2016 10:00 (20 minutes)

Based on the strong performance of the LHC accelerator, it is anticipated that peak luminosities of two times the design luminosity of L = 2 x10^34 cm^-2s^-1 are likely to be reached before 2018 and probably significantly exceeded in the so-called Phase I period until 2022. At this higher luminosity and increased hit occupancies the current CMS pixel detector would be subject to severe dead time and inefficiencies introduced by limited buffers in the analog read-out chip and effects of radiation damage in the sensors. Therefore a new pixel detector is being built and will replace the current detector in the extended year-end technical stop in 2016. The new front-end readout chip is an integral part of the upgrade and comprises larger data buffers, an increased transmission bandwidth, and low-threshold comparators. These improvements allow the new pixel detector to sustain and improve the efficiency of the current pixel tracker at the increased requirements imposed by high luminosities and pile-up. This contribution presents performance measurements of the production read-out chip and final detector modules conducted at the DESY test beam facility.

Primary author: Mr SPANNAGEL, Simon (DESY - CMS)

Presenter: Mr SPANNAGEL, Simon (DESY - CMS)

Session Classification: Data analysis

Contribution ID: **26** Type: **not specified**

Feedback & closing session

Friday 5 February 2016 13:00 (15 minutes)

Contribution ID: **27** Type: **not specified**

Discussions

Wednesday 3 February 2016 12:00 (30 minutes)

Session Classification: Discussions

Contribution ID: **28** Type: **not specified**

Discussions

Wednesday 3 February 2016 17:30 (30 minutes)

Session Classification: Discussions

Contribution ID: **29** Type: **not specified**

Discussions

Contribution ID: **30** Type: **not specified**

Discussions

Contribution ID: **31** Type: **not specified**

Beam test of 3D pixel detectors up to fluences of 9e15 neq/cm2

Thursday 4 February 2016 10:20 (20 minutes)

3D FEI4 pixel detectors from the IBL production were non-uniformly irradiated at CERN-PS with 23 GeV protons up to a maximum fluence of 9e15 neq/cm2. The devices have been studied in beam tests at CERN SPS and good efficiencies of >97% have been achieved at the highest fluence already at 170 V. Especially interesting is the option to study a vast range of fluences on a single pixel device due to the non-uniform beam profile. This presentation will give an overview on the achieved results.

Primary author: Mr FOERSTER, Fabian (IFAE Barcelona)

Co-authors: Mr VAZQUEZ, David (IFAE Barcelona); Mr CAVALLARO, Emanuele (IFAE Barcelona); Mr LOPEZ PAZ, Ivan (IFAE Barcelona); Dr LANGE, Joern (IFAE Barcelona); Prof. GRINSTEIN, Sebastian (IFAE Barcelona)

Presenter: Mr FOERSTER, Fabian (IFAE Barcelona)

Session Classification: Data analysis

Contribution ID: **32** Type: **not specified**

Beam tests of the ATLAS Forward Proton (AFP) Detector

Friday 5 February 2016 11:50 (20 minutes)

The ATLAS Forward Proton (AFP) project intends to measure protons scattered under a small angle from the ATLAS proton-proton interaction point.
To this end, it is planned to install 3D Silicon pixel and Quartz-Cherenkov time-of-flight detectors 210 m away from the interaction point.
Beam tests with a first unified AFP prototype detector combining tracking and timing sub-detectors and a common readout have been performed at the CERN-SPS in November 2014 and September 2015 to complete the system integration and study the detector performance. The successful tracking-timing integration was demonstrated by the spatial correlation of recorded tracking and timing data. Good pixel hit efficiencies above 99% were observed. Spatial resolutions in the short pixel direction of 6 um per pixel plane and of 3–4 um for the full 4-plane tracker were found, surpassing the AFP target of 10 um. The timing detector showed also good hit efficiencies above 99%, and a full-system time resolution of 35 ps was found for a train of two Quartz bars without dedicated optimizations, fulfilling the requirements for the initial low-luminosity AFP runs.

Primary author: Mr LANGE, Joern (IFAE Barcelona)

Presenter: Mr LANGE, Joern (IFAE Barcelona)

Session Classification: Data analysis

Contribution ID: **33** Type: **not specified**

AllPix Hands-On Tutorial

Thursday 4 February 2016 15:00 (1h 20m)

Presenter: Dr BENOIT, Mathieu (CERN)

Session Classification: Tutorials

Contribution ID: **34** Type: **not specified**

The Secondary Beam Lines and the Irradiation Facility of the PSI Proton Accelerators

Wednesday 3 February 2016 16:10 (20 minutes)

This contribution will give an overview of the secondary beam lines of the PSI High Intensity Proton Accelerator (HIPA). Particular emphasis will be given to those facilities currently available for tests. Moreover, the Proton Irradiation Facility (PIF) located at the PSI PROSCAN protontherapy centre will be presented.

Primary author: Dr REGGIANI, Davide (Paul Scherrer Institut)

Co-authors: Dr DEITERS, Konrad (Paul Scherrer Institut); Dr HAJDAS, Wojtek (Paul Scherrer Institut)

Presenter: Dr REGGIANI, Davide (Paul Scherrer Institut)

Session Classification: Test beam facilities

Contribution ID: **35** Type: **not specified**

IFAE Track reconstruction with EUTelescope

Friday 5 February 2016 09:20 (20 minutes)

3D pixel sensors before and after irradiation have been tested in the September 2015 ATLAS Pixel testbeam at CERN. Both the latest Eutelescope version and a stable previous release have been used for track reconstruction. This talk will present the experience installing and working with both software versions.

Primary author: Mr VÁZQUEZ FURELOS, David (IFAE - Barcelona)

Presenter: Mr VÁZQUEZ FURELOS, David (IFAE - Barcelona)

Session Classification: Tools

Contribution ID: **36** Type: **not specified**

Registration

Wednesday 3 February 2016 08:30 (30 minutes)

Contribution ID: **37** Type: **not specified**

The Implementation of the GBL Algorithm within EUTelescope

Friday 5 February 2016 09:00 (20 minutes)

A versatile implementation of the GBL algorithm within EUTelescope is introduced. Features of the implementation and current developments are highlighted. Current analyses are briefly described as an aid for further reconstruction work.

Primary author: Mr MORTON, Alexander (University of Glasgow)

Presenter: Mr MORTON, Alexander (University of Glasgow)

Session Classification: Tools

Contribution ID: **38** Type: **not specified**

Fermilab Test Beam Facility

Wednesday 3 February 2016 16:30 (20 minutes)

The Fermilab Test Beam Facility is a world class facility for testing and characterizing particle detectors. The facility has been in operation since 2005 and has undergone significant upgrades in the last two years. A second beam line with cryogenic support has been added and the facility has adopted a data acquisition system. The facility also recently added a cosmic telescope test stand and improved tracking capabilities. With two operational beam lines, the facility can deliver a variety of particle types and momenta ranging from 120 GeV protons in the primary beam line to 200 MeV particles in the tertiary beam line. In addition, recent work has focused on analyzing the beam structure to provide users with information on the data they are collecting. With these improvements, the Fermilab Test Beam facility is one of the most versatile test beams in the world, capable of supporting High Energy physics applications as well as industry users. The upgrades will be discussed along with plans for future improvements.

Primary author: ROMINSKY, Mandy (Fermi National Accelerator Laboratory)

Presenter: ROMINSKY, Mandy (Fermi National Accelerator Laboratory)

Session Classification: Test beam facilities

Contribution ID: **39** Type: **not specified**

EUDAQ Generic Online Monitoring System

Thursday 4 February 2016 11:50 (20 minutes)

In this talk I will present plans and future developments of a generic online monitoring system for EUDAQ software package. The current monitoring system of EUDAQ was developed and designed for beam telescopes detectors. We present plans to develop a general purposed monitoring system within EUDAQ that will serve different type of detectors.

Primary authors: Dr CHAVEZ, Carlos (University of Sussex); Mr COATES, Tom (University of Sussex)

Presenter: Dr CHAVEZ, Carlos (University of Sussex)

Session Classification: Tools

Contribution ID: **40** Type: **not specified**

The DESY-II Test Beam Facility

Wednesday 3 February 2016 15:20 (20 minutes)

The DESY-II Test Beam Facility will resume operations in March 2016
The recent improvements and enhancements of the facility will be highlighted.

Primary author: Mr STANITZKI, Marcel (DESY)

Co-authors: MEYNERS, Norbert (DESY); DIENER, Ralf (DESY)

Presenter: Mr STANITZKI, Marcel (DESY)

Session Classification: Test beam facilities

Contribution ID: **41** Type: **not specified**

CERN testbeam facilities

Wednesday 3 February 2016 17:10 (20 minutes)

The status of the PS/SPS Testbeam Facilities are presented.

Primary author: Dr WILKENS, Henric (CERN)

Presenter: Dr WILKENS, Henric (CERN)

Session Classification: Test beam facilities

Contribution ID: **42** Type: **not specified**

EUTelescope (for ATLAS Pixel) Hands-On Tutorial

Thursday 4 February 2016 14:20 (2 hours)

Presenter: BISANZ, Tobias (Uni Göttingen - ATLAS)

Session Classification: Tutorials

Contribution ID: **43** Type: **not specified**

DAFNE Beam Test Facility and Performances Assessments of Larger Pixels CMOS sensors

Friday 5 February 2016 10:50 (20 minutes)

The DAFNE Beam Test Facility (BTF) is a beam transfer line optimized to produce single electrons/positrons for detector performances assessment. This contribution will describe the implementation in this facility of an ultra-thin and high spatial resolution beam telescope for the performances assessment of large pixel CMOS sensors designed to instrument the outer layers of an inner tracker.

Primary author: Mr PEREZ PEREZ, Alejandro (IPHC)

Presenter: Mr PEREZ PEREZ, Alejandro (IPHC)

Session Classification: Data analysis

Contribution ID: **44** Type: **not specified**

Monitoring Framework - SDHCAL based

Thursday 4 February 2016 12:10 (20 minutes)

Presenter: ETÉ, Rémi (CNRS/IPNL)

Session Classification: Tools

Contribution ID: **45** Type: **not specified**

Status of the miniTLU

Friday 5 February 2016 09:40 (20 minutes)

Presenter: Dr CUSSANS, David (Bristol University)

Session Classification: Tools