

17th RD50 Workshop (CERN)

Report of Contributions

Contribution ID: 0

Type: **not specified**

Investigation of Punch-through Protection (PTP)

Thursday, 18 November 2010 11:50 (20 minutes)

We checked the effectiveness of PTP structures against large deposits of ionization in the detector bulk using an IR laser, and compared it with the results of commonly used DC i-V measurements.

Primary author: Prof. SADROZINSKI, Hartmut (SCIPP, UC santa Cruz)

Presenter: Prof. SADROZINSKI, Hartmut (SCIPP, UC santa Cruz)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 1

Type: **not specified**

Annealing Effects on Depletion Voltage and Capacitance of Float Zone and Magnetic Czochralski Silicon Diodes After 800 MeV Proton Exposure

Wednesday, 17 November 2010 15:10 (20 minutes)

The radiation damage effects on p- and n-type Float Zone (FZ) and Magnetic Czochralski (MCz) Silicon diodes were characterized by studying the capacitance and depletion voltage. The diodes were exposed to 800 MeV protons to fluences up to 1.5×10^{15} p/cm². The diodes were then annealed at 60 °C and measured at various intervals up to 1,000 minutes. The intent of this study is to understand the transition from reverse annealing to beneficial annealing where charge type inversion occurs to fully characterize the annealing behavior of the diodes. We compare the results to data from previous studies taken under different irradiation conditions and to theoretical models.

Primary author: Prof. SEIDEL, Sally (University of New Mexico)

Co-authors: METCALFE, Jessica (University of New Mexico); Dr TOMS, Konstantin (University of New Mexico); HOEFERKAMP, Martin (University of New Mexico)

Presenter: Dr TOMS, Konstantin (University of New Mexico)

Session Classification: Defect and Material Characterization

Contribution ID: 2

Type: **not specified**

Characterization and Testbeam Analysis of irradiated Silicon n-in-p Pixel Detectors for the ATLAS Upgrade

Thursday, 18 November 2010 14:00 (20 minutes)

Silicon n-in-p pixel detectors from the latest CiS production are detectors similar to ones from the latest ATLAS pixel production.

First measurements of irradiated CiS n-in-p single chip assemblies (SCA) connected to the current ATLAS front end chip FE-I3 were performed during the last weeks. Characterization results will be presented from devices irradiated with protons and neutrons up to fluences of $10E15$ n_{eq}, as well as results from test beam studies at the CERN H6B area. An outlook on the ongoing irradiation program and the upcoming analysis steps will summarize the talk.

Primary author: GALLRAPP, Christian (CERN)

Co-authors: LA ROSA, Alessandro (CERN); MACCHIOLO, Anna (Max-Planck-Institut für Physik); PERNEGGER, Heinz (CERN); BEIMFORDE, Michael (Max-Planck-Institut für Physik); WEIGELL, Philipp (Max-Planck-Institut für Physik); RICHTER, Rainer (MPI-Halbleiterlabor); NISIUS, Richard (Max-Planck-Institut für Physik)

Presenter: GALLRAPP, Christian (CERN)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 3

Type: **not specified**

3D-FBK pixel sensors: overview of recent results with proton and neutron irradiated sensors

Thursday, 18 November 2010 16:40 (20 minutes)

3D Silicon sensors fabricated at FBK-irst with Double-side Double Type Column approach and columnar electrodes only partially etched through p-type substrates have been irradiated and tested in laboratory and with 120 GeV pion beam at CERN SPS. We will present an overview of recent results from laboratory tests obtained with devices irradiated with protons and neutrons up to 5×10^{15} neq/cm².

Primary author: Mr MICELLI, Andrea (Universita degli Studi di Udine)

Presenter: Mr MICELLI, Andrea (Universita degli Studi di Udine)

Session Classification: 3D sensors

Contribution ID: 4

Type: **not specified**

Comparative Studies of Irradiated 3D Silicon Strip Detectors on p-type and n-type Substrate

Thursday, 18 November 2010 17:00 (20 minutes)

Double-sided 3D silicon strip detectors, manufactured by CNM on p-type and n-type substrate, were measured after irradiation with sLHC strip- and pixel fluences. The device irradiations were performed at the proton cyclotron in Karlsruhe with 25 MeV protons. Results of measurements with a beta source and an infrared laser will be shown. After a radiation fluence of $2 \times 10^{16} \text{ n}_{\text{eq}}/\text{cm}^2$, the highest fluence studied, the detector on n-type substrate (p+ in n) yields a signal comparable to that of the detector processed on p-type substrate (n+ in p). A relative CCE of more than 50 % can be reached. The influence of different temperatures on signal, noise and charge multiplication will be discussed.

Primary author: KOEHLER, Michael (Freiburg University)

Presenter: KOEHLER, Michael (Freiburg University)

Session Classification: 3D sensors

Contribution ID: 5

Type: **not specified**

First measurements with planar pixel detectors after SLHC fluences

Thursday, 18 November 2010 14:20 (20 minutes)

ATLAS SingleChip-Assemblies based on the FE-I3 readout chip have been irradiated with reactor neutrons in Ljubljana to fluences up to $2E16$ neq/cm². First measurements obtained with a Sr-90 source in the lab will be presented. The collected charge will also be compared to preliminary testbeam results.

Summary

In the coming years, LHC will be upgraded step by step to reach a total integrated luminosity of few thousand inverse femtobarns. The experiments at LHC are also planning upgrades, among them replacements of their pixel detectors.

ATLAS will follow a two-step strategy with the installation of a new insertable b-layer (IBL) in 2016 with a radius of only 32 mm from the beam. Planar, 3D and diamond sensors are under consideration as IBL sensors; sufficient radiation hardness for a fluence of $5E15$ neq/cm² was specified. The pixel sensors for the innermost layer at SLHC will even have to withstand up to $2E16$ neq/cm².

ATLAS SingleChip-Assemblies based on the FE-I3 readout chip have been irradiated with reactor neutrons in Ljubljana to fluences up to $2E16$ neq/cm². First measurements obtained with a Sr-90 source in the lab will be presented. The collected charge will also be compared to preliminary testbeam results.

Furthermore, a brief status update on the irradiation and testbeam measurements of samples from the “common RD50/PPS” and the “thin n-bulk PPS” productions with CiS will be given.

Primary author: MUENSTERMANN, Daniel (TU Dortmund)

Presenter: MUENSTERMANN, Daniel (TU Dortmund)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 6

Type: **not specified**

Annealing effects in n+p strip detectors irradiated with high neutron fluences

Thursday, 18 November 2010 09:00 (20 minutes)

Miniature p-type strip detectors were irradiated with reactor neutrons to fluences in the range from 2×10^{14} neq/cm² to 5×10^{15} neq/cm². Collected charge was measured with signals caused by fast electrons from Sr90 source and read out by SCT128A chip. Collected charge and leakage current was measured up to high bias voltages (1400 V) at which signs of charge multiplication can be observed. Detectors were submitted to successive annealing steps at 60°C up to total time of 5040 minutes. Increase of collected charge after long annealing times was measured at high bias voltages. A similar effect was observed in the leakage current, which at high voltages increased with reverse-annealing time.

Primary author: MANDIC, Igor (University of Ljubljana)

Presenter: MANDIC, Igor (University of Ljubljana)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 7

Type: **not specified**

Edge-TCT measurements of heavily irradiated HPK p-type sensors

Thursday, 18 November 2010 10:20 (20 minutes)

HPK p-type sensor was irradiated in steps with reactor neutrons up to the fluence of $1e16$ cm⁻². After each step several Edge-TCT measurements were performed during initial stage of annealing. Charge collection properties, drift velocity profiles were investigated as a function of annealing, fluence and bias voltage.

Primary author: KRAMBERGER, Gregor (Jozef Stefan Institute)

Co-authors: MANDIĆ, Igor (Jozef Stefan Institute); MIKUŽ, Marko (Jozef Stefan Institute); MILOVANOVIĆ, Marko (Jozef Stefan Institute); ZAVRTANIK, Marko (Jozef Stefan Institute); CINDRO, Vladimir (Jozef Stefan Institute)

Presenter: KRAMBERGER, Gregor (Jozef Stefan Institute)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 8

Type: **not specified**

Optical studies of defect centers formed in MCz-Si and FZ-Si by high-fluence neutron irradiation

Wednesday, 17 November 2010 13:50 (20 minutes)

Photoluminescence (PL) and infrared absorption (IRA) techniques have been applied to study defect centers formed in MCz and FZ by high-fluence neutron irradiation. The MCz-Si and FZ-Si samples prepared by the WODEAN group were irradiated with neutron fluences ranging from 1×10^{14} to $3 \times 10^{16} \text{ cm}^{-2}$. The studies were performed in a temperature range of 13 K–100 K using both the as-irradiated and subjected to isochronal annealing samples. The annealing temperature ranged from 300 to 780 K and the time was 1 h or 0.5 h. The PL measurements were mainly concentrated on the intensity changes of the W (I3) and I4 lines, commonly assumed to be related to complexes built of tri- and four- silicon interstitial atoms, respectively. Temperature dependence for the W line intensity was measured in a temperature range of 13–110 K. The quenching process energy for the W line was found to be 0.3 eV, what is closed to the activation energy for vacancy diffusion. Assuming that W-line is a tri-interstitial complex (I3), this could suggest that the annihilation of the W-line at 1.018 eV is due to vacancy - interstitial recombination process. From the Arrhenius plot for the I4 line, the activation energy for increasing the I4 line (1.039 eV) intensity was found to be nearly the same as that for decreasing the W line (1.018 eV) intensity and was equal to $(0.75 \pm 0.15) \text{ eV}$ only in a very narrow temperature range. This would suggest that the tri-interstitials can be the precursors for the formation of I4 centres in this temperature range. The IRA measurements were focused on the study of the absorption coefficient related to the divacancy (V2) in neutral and negatively charged states. From these measurements, the concentrations of V2(0) and V2(-) for various neutron fluences were determined and the rates of their formation have been found to be 0.3 cm^{-1} and 0.13 cm^{-1} , respectively.

Primary author: SURMA, Barbara (Institute of Electronic Materials Technology)

Co-authors: KAMINSKI, Pawel (Institute of Electronic Materials Technology); KOZLOWSKI, Roman (Institute of Electronic Materials Technology)

Presenter: SURMA, Barbara (Institute of Electronic Materials Technology)

Session Classification: Defect and Material Characterization

Contribution ID: 9

Type: **not specified**

AC—coupled pitch adapters for silicon strip detectors

Thursday, 18 November 2010 11:10 (20 minutes)

Silicon strip detector modules that are used in tracker systems of high energy physics experiments consist of readout hybrid board, the sensor itself and pitch adapter (PA) in between hybrid and sensor. Modern strip detectors are almost exclusively AC-coupled because of high leakage current due to the harsh radiation environment. The AC-coupling requires resistive isolation of implanted strips from the DC-biasing circuit. Strip isolation is commonly realized by integrated poly-silicon bias resistors, where the resistance value is typically around $1\text{M}\ \Omega$. We present a novel approach for implementing the AC-coupling in the pitch adapter. AC-coupled PA's have been processed on ordinary glass wafers. The two layer fan metallization is aluminum and the intermediate capacitor insulator is aluminum oxide (Al_2O_3) deposited by the Atomic Layer Deposition (ALD) method. ALD is self-limiting Chemical Vapor Deposition (CVD) process, which characteristically results in pinhole-free thin films. The temperature of ALD Al_2O_3 deposition is 300°C , thus it is appropriate for standard glass wafers, which are limited to about 400°C in process steps. The bias resistors are made on the glass wafer by sputtering tungsten nitride (WN_x). The deposition of WN_x takes place at approximately room temperature and the resistors are patterned by wet etching with hydrogen peroxide. The electrical characterization of AC-coupled PA's indicate very good breakdown performance of the Al_2O_3 capacitors and homogeneity of WN_x resistance values. A DC-coupled n+/p-/p+ strip detector made of p-type Fz-Si and irradiated with protons to a fluence of 3×10^{14} neq/cm² was attached to the CMS APV readout hybrid with an AC-coupled PA. The strip detectors size is $4\text{cm} \times 4\text{cm}$ and it has 768 strips. Our test beam results indicate a signal-to-noise ratio of 27 for this module.

Primary author: HAERKOENEN, Jasu (Helsinki Institute of Physics HIP)

Co-authors: Dr TUOMINEN, Eija (HIP); Dr TUOVINEN, Esa (HIP); Mr MOILANEN, Henri (HIP); Dr SPIEGEL, Lenny (FNAL); Dr LUUKKA, Panja (HIP); Mr MÄENPÄÄ, Teppo (HIP); Dr GOTRA, Yuri (FNAL)

Presenter: HAERKOENEN, Jasu (Helsinki Institute of Physics HIP)

Session Classification: Development and Characterization of Strip and Pixel Sensors

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

A novel two-dimensional microstrip sensor with charge division readout

Thursday, 18 November 2010 13:40 (20 minutes)

A novel microstrip sensor with polysilicon electrodes manufactured at CNM-IMB is introduced. The slightly resistive electrodes allows the determination of the particle's hit position along the microstrip direction using a charge-division-based readout. Preliminary results from laser, radioactive source and test beam characterization are given.

Primary author: Dr VILA ALVAREZ, Ivan (IFCA - Instituto de Fisica de Cantabria-Consejo Sup. de Investig)

Presenter: Dr VILA ALVAREZ, Ivan (IFCA - Instituto de Fisica de Cantabria-Consejo Sup. de Investig)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 11

Type: **not specified**

New results on the annealing behaviour of the E4/E5-defect

Wednesday, 17 November 2010 14:10 (20 minutes)

This work deals with the bistable configurations of the E4/E5-defect levels, which are known to be the important current generator after neutrons and charged hadrons irradiation. We studied 300 μm thick n-type diodes made from MCz and FZ-silicon after irradiation with reactor neutrons. Capacitance-Deep Level Transient Spectroscopy (C-DLTS) as well as Capacitance-Voltage and Current-Voltage characteristics were performed. E4/E5 is visible in C-DLTS directly after irradiation and anneals out at 80 $^{\circ}\text{C}$ by changing its configuration. The injection of high forward current reestablishes the E4/E5-configuration, even after high annealing temperatures (e.g. 200 $^{\circ}\text{C}$). The aim of this study is to obtain optimal parameters for future studies of the E4/E5-defect. For this reason injection temperature, type of injected charge carriers, duration and value of applied current pulse were varied.

Primary author: JUNKES, Alexandra (Universität Hamburg)

Co-authors: NEUBÜSER, Coralie (Universität Hamburg); FRETWURST, Eckhart (Universität Hamburg)

Presenter: JUNKES, Alexandra (Universität Hamburg)

Session Classification: Defect and Material Characterization

Contribution ID: 12

Type: **not specified**

Properties of a new series of Hamamatsu Si diodes

Wednesday, 17 November 2010 14:50 (20 minutes)

A new series of diodes FZ-Si (Hamamatsu) investigated by: 1) a standar technique (I(V) and C(V)); 2) by microwave photoconductivity decay measurement; 3) the response on the linear front bias pulse technique (BELIV); 4) the photoconductivity specra in the extrinsic region. Measurements performed at room a tat low temperature. The results are compared with the similar measurements in other supplier and in irradiated samples.

Primary author: Prof. VAITKUS, Juozas (Vilnius University)

Co-authors: Mr VELICKA, Arunas (Vilnius University); Mr ULECKAS, Aurimas (Vilnius University); Dr GAUBAS, Eugenijus (Vilnius University); Mr KUSAKOVSKIJ, Jurij (Vilnius University); Mr ZILINSKAS, Kestutis (Vilnius University); Mr VAINORIUS, Neimantas (Vilnius University); Mr CEPO-NIS, Tomas (Vilnius University); Prof. KAZUKAUSKAS, Vaidotas (Vilnius University)

Presenter: Prof. VAITKUS, Juozas (Vilnius University)

Session Classification: Defect and Material Characterization

Contribution ID: 13

Type: **not specified**

TCAD simulation of Si crystal with different clusters.

Wednesday, 17 November 2010 14:30 (20 minutes)

The TCAD Synopsis program was used for: 1) investigation of electric field distribution in Si crystal containing different types and concentration of clusters; 2) analysis of dynamics of electric field around the cluster during and after excitation by a short light pulse. An aim of presentation is an attraction of proposals to model the behavior of semiconductor in other situations.

Primary author: Prof. VAITKUS, Juozas (Vilnius University)

Co-authors: Dr ZASINAS, Ernestas (Vilnius university); Mr BONDZINSKAS, Rokas (Vilnius university)

Presenter: Prof. VAITKUS, Juozas (Vilnius University)

Session Classification: Defect and Material Characterization

Contribution ID: 14

Type: **not specified**

Fabrication of new p-type strip detectors with trench to enhance the charge multiplication effect in the n-type electrodes.

Thursday, 18 November 2010 11:30 (20 minutes)

The project aims to fabricate and fully characterize p-type strip detectors with trench electrodes to enhance the charge multiplication effect in the irradiated devices.

Primary author: Dr PELLEGRINI, Giulio (Centro Nacional de Microelectronica CNM-IMB-CSIC)

Presenter: Dr PELLEGRINI, Giulio (Centro Nacional de Microelectronica CNM-IMB-CSIC)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 15

Type: **not specified**

Status of 3D detector productions at CNM

Thursday, 18 November 2010 16:00 (20 minutes)

I will report on the fabrication of new 3D detectors devices for the Atlas 3D collaboration and other CERN experiments.

Primary author: Dr PELLEGRINI, Giulio (Centro Nacional de Microelectronica CNM-IMB-CSIC)

Presenter: Dr PELLEGRINI, Giulio (Centro Nacional de Microelectronica CNM-IMB-CSIC)

Session Classification: 3D sensors

Contribution ID: 16

Type: **not specified**

3D Detector status at FBK

Thursday, 18 November 2010 16:20 (20 minutes)

In this talk we present the latest results from the development of double sided, double type column 3D detectors with full passing columns at FBK.

The main issues related to the fabrication process and preliminary results from the electrical characterization of several test devices will be discussed.

Primary authors: VIANELLO, Elisa (Fondazione Bruno Kessler); GIACOMINI, Gabriele (Fondazione Bruno Kessler)

Co-authors: BAGOLINI, Alvise (Fondazione Bruno Kessler); DALLA BETTA, Gian-Franco (University of Trento); BOSCARDIN, Maurizio (Fondazione Bruno Kessler); ZORZI, Nicola (Fondazione Bruno Kessler)

Presenters: VIANELLO, Elisa (Fondazione Bruno Kessler); GIACOMINI, Gabriele (Fondazione Bruno Kessler)

Session Classification: 3D sensors

Contribution ID: 17

Type: **not specified**

Room temperature annealing of the CCE in p-type Si sensors

Thursday, 18 November 2010 09:20 (20 minutes)

Set of annealing measurements taken after ~ 200 days annealing at room temperature

Primary author: Dr CASSE, Gianluigi (Department of Physics)

Presenter: Dr CASSE, Gianluigi (Department of Physics)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 18

Type: **not specified**

Annealing study of a high irradiated FZ CMS mini sensor with the alibava setup

Thursday, 18 November 2010 10:00 (20 minutes)

With the fully operational ALiBaVa setup at Karlsruhe an annealing study of a standard CMS mini sensor (FZ, n-type) was performed. The chosen fluence of 7.5×10^{14} Neq/cm² lies well above expectation for strip sensors after 300fb-1 at LHC and allows exploring the performance at even higher fluence, e.g. due to higher integrated luminosity before replacement of the strip Tracker or as material for S-LHC down to a radius of about 45cm. The focus of this study is on measured signal and signal to noise ratio. The sensor was not only run in reverse bias mode but with forward bias too, where we had a closer look at current and noise annealing.

Primary author: EBER, Robert (Institut für Experimentelle Kernphysik, KIT)

Co-authors: DIERLAMM, A. (Institut für Experimentelle Kernphysik, KIT); KORNMAYER, A. (Institut für Experimentelle Kernphysik, KIT); NÜRNBERG, Andreas (Institut für Experimentelle Kernphysik, KIT); FREY, M. (Institut für Experimentelle Kernphysik, KIT); STECK, P. (Institut für Experimentelle Kernphysik, KIT); BARVICH, T. (Institut für Experimentelle Kernphysik, KIT); PFISTER, Tanja (Institut für Experimentelle Kernphysik, KIT); MÜLLER, Th. (Institut für Experimentelle Kernphysik, KIT); DE BOER, W. (Institut für Experimentelle Kernphysik, KIT)

Presenter: EBER, Robert (Institut für Experimentelle Kernphysik, KIT)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: **19**

Type: **not specified**

Welcome to Workshop

Wednesday, 17 November 2010 13:30 (20 minutes)

Presenters: CASSE, Gianluigi (Department of Physics); MOLL, Michael (CERN)

Session Classification: Welcome

Contribution ID: 20

Type: **not specified**

Discussion on Defect and Material Characterization and Pad Detector Characterization

Wednesday, 17 November 2010 16:20 (40 minutes)

Presenters: FRETWURST, Eckhart (II. Institut fuer Experimentalphysik); Prof. BRUZZI, Mara (INFN and University of Florence)

Session Classification: Defect and Material Characterization

Contribution ID: 21

Type: **not specified**

Discussion on Full Detector Systems

Thursday, 18 November 2010 15:00 (30 minutes)

Presenters: CASSE, Gianluigi (Department of Physics); KRAMBERGER, Gregor (Jozef Stefan Institute)

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 22

Type: **not specified**

Discussion on 3D sensors

Thursday, 18 November 2010 17:40 (30 minutes)

Presenters: Dr PARKES, Chris (Glasgow); BATES, Richard (Department of Physics and Astronomy)

Session Classification: 3D sensors

Contribution ID: 23

Type: **not specified**

Annealing CCE study on HPK FZ p-on-n ministrip detectors.

Thursday, 18 November 2010 09:40 (20 minutes)

HPK FZ p-on-n ministrip detectors, of the type currently used in several LHC experiments, have been irradiated both with protons and neutrons to equivalent fluences of $1e15$ n/cm². The detectors have then been characterized with beta CCE measurements based on the ALIBAVA system throughout several annealing steps, to assess the effect on the performances of the detectors of hypothetical long shutdowns of the cooling systems of the experiments.

Primary authors: Mr LUCAS, Christopher (University of Bristol (UK)); Dr DOLENC, Irena (CERN); Dr MOLL, Michael (CERN); Mr PACIFICO, Nicola (University of Bari / CERN)

Co-author: Ms MILITARU, Otilia (Universite Catholique de Louvain)

Presenter: Mr LUCAS, Christopher (University of Bristol (UK))

Session Classification: Development and Characterization of Strip and Pixel Sensors

Contribution ID: 25

Type: **not specified**

Reverse current of heavily irradiated silicon detectors operated in the avalanche mode

Wednesday, 17 November 2010 16:00 (20 minutes)

The high concentration of radiation induced defects in the detector bulk is the key factor of detector parameters stabilization at very high bias voltage. In this presentation the effect of deep levels on the detector reverse current is considered and the calculated I-V characteristics are compared with the experimental ones.

Primary author: EREMIN, Vladimir

Co-author: VERBITSKAYA, Elena

Presenter: EREMIN, Vladimir

Session Classification: Defect and Material Characterization

Contribution ID: 26

Type: **not specified**

Test beam analysis on Timepix 3D pixel detector

Thursday, 18 November 2010 17:20 (20 minutes)

An n-type double-sided 3D detector fabricated at CNM bump bonded to a Timepix chip has been tested in a pion and a micro-focused x-ray test beams. The result from both test beams will be shown. The x-ray test beam shows relative detection maps of the 3D pixel device.

The pion test beam results show the absolute detection efficiency, cluster size and resolution for detectors with particles at a range of incident angles from normal to 18 degrees.

Primary author: PARKS, Chris (Glasgow University)

Presenter: PARKS, Chris (Glasgow University)

Session Classification: 3D sensors

Contribution ID: 27

Type: **not specified**

The Timepix Telescope

Thursday, 18 November 2010 14:40 (20 minutes)

A report on the development of a high resolution particle tracking telescope based on the Timepix pixel detector. Using the different modes of operation available in Timepix a Telescope system has been developed that can provide a spatial resolution of under 2 microns and a timing resolution to the order of a nanosecond. This track time tagging ability has been used to incorporate an LHCb/Beetle 40MHz readout to allow an LHC compatible device under test to be operated in an asynchronous beam. Initial results from testbeams with Timepix and other test targets from 2009 and 2010 will be reported.

Primary author: PLACKETT, Richard (Glasgow University)

Presenter: PLACKETT, Richard (Glasgow University)

Session Classification: Development and Characterization of Strip and Pixel Sensors