

**1st Summer School on  
INtelligent Signal Processing  
for FrontIER Research and  
Industry**

**Report of Contributions**

Contribution ID: 0

Type: **not specified**

## **Introductory lecture to the school: Detectors and Electronics for 21st century Instrumentation: What have we learnt? Where should we focus?**

*Wednesday, 10 July 2013 09:00 (2 hours)*

**Presenter:** Prof. ALLPORT, Philip Patrick (University of Liverpool (GB))

Contribution ID: 1

Type: **not specified**

# **Advanced CMOS Technologies: current trends and future prospects**

*Wednesday, 10 July 2013 11:30 (1h 30m)*

**Presenter:** Dr MARCHIORO, Alessandro (CERN)

Contribution ID: 2

Type: **not specified**

## **The 3D technology or towards full integration**

*Wednesday, 10 July 2013 16:30 (1h 30m)*

**Presenter:** Dr PATTI, Robert (Tezzaron, SA, USA)

Contribution ID: 3

Type: **not specified**

## Intelligent PMTs versus SiPMs

*Thursday, 11 July 2013 09:00 (2 hours)*

**Presenter:** Dr PUIILL, Veronique (Laboratoire de l'Accelérateur Lineaire, Orsay, France)

Contribution ID: 4

Type: **not specified**

## **SiPM used as PMT devices for ionized particle detection and new trends on related pixel technology, signal processing issues and applications**

*Thursday, 11 July 2013 11:30 (1h 30m)*

**Presenter:** Prof. SAVELIEV, Valeri (Institute of Applied Mathematics, Russian Academy of Science)

Contribution ID: 5

Type: **not specified**

# Philips Digital Photon Counter, Applications to High Energy, Astrophysics and Medical Physics

*Thursday, 11 July 2013 16:30 (1h 30m)*

**Presenter:** Dr HAEMISH, York (Philips Digital Photon Counting, Philips Group of Innovation)

Contribution ID: 6

Type: **not specified**

## **Introduction to the use of microstrip and pixel based devices & corresponding main challenges to be confronted by their associated Front-End Electronics**

*Friday, 12 July 2013 09:00 (2 hours)*

**Presenter:** Dr DA VIA', Cinzia (Manchester University, UK)



Contribution ID: 7

Type: **not specified**

## **Micro-strip based detection systems: advances and new technological developments**

*Friday, 12 July 2013 11:30 (1h 30m)*

**Presenter:** Prof. UNNO, Yoshinobu (High Energy Accelerator Research Organization (JP))

Contribution ID: 8

Type: **not specified**

# **Intelligent Signal Front-End Processing for micro-strip based instruments including triggering capability**

*Friday, 12 July 2013 16:30 (1h 30m)*

**Presenter:** Prof. RYD, Anders (Cornell University (US))

Contribution ID: 9

Type: **not specified**

## **Intelligent Front-End for pixel-based instruments: Front-End and novel ideas**

*Saturday, 13 July 2013 09:00 (2 hours)*

**Presenter:** Dr RATTI, Lodovico (University of Pavia)

Contribution ID: **10**

Type: **not specified**

## **Intelligent Front-End for pixel-based instruments: digital processing of the pixel matrix part**

*Saturday, 13 July 2013 11:30 (1h 30m)*

**Presenter:** Dr GABRIELLI, Alessandro (Universita di Bologna e INFN (IT))

Contribution ID: 11

Type: **not specified**

## **Semiconductor detector technology for medical and scientific imaging: quantum processing and Medipix developments in particular**

*Saturday, 13 July 2013 16:30 (1h 30m)*

**Presenter:** Dr HEIJNE, Erik (CERN and NIKHEF)

Contribution ID: 12

Type: **not specified**

## **Challenges and opportunities of massive parallelism**

*Sunday, 14 July 2013 09:45 (45 minutes)*

**Presenter:** Dr SALVINI, Stef (University of Oxford)

Contribution ID: 13

Type: **not specified**

## **The challenges of real-time processing on detector in Astro & HEP worlds in the 21st century**

*Sunday, 14 July 2013 11:00 (1 hour)*

**Presenters:** Prof. NEWBOLD, Dave (Bristol University & RAL); Dr ZARB-ADAMI, Kris (Oxford)

Contribution ID: 14

Type: **not specified**

## Optical wireless for data transmission

*Monday, 15 July 2013 09:00 (1h 30m)*

**Presenter:** Prof. CIARAMELLA, Ernesto (Scuola Superiore Sant'Anna, IT)



Contribution ID: 15

Type: **not specified**

## **The interconnected world: needs in Astrophysics**

*Monday, 15 July 2013 11:00 (30 minutes)*

**Presenter:** Prof. JONES, Michael (Oxford)

Contribution ID: 16

Type: **not specified**

## **New trends in the High Tech world from INTEL**

*Monday, 15 July 2013 16:30 (1h 30m)*

**Presenter:** Dr BORGES, Leonardo (INTEL (Houston, USA))

Contribution ID: 17

Type: **not specified**

## **Test bench: specificities and evolution for the HEP and the Astrophysics Fields**

*Tuesday, 16 July 2013 08:45 (1h 30m)*

**Presenters:** Dr GREGOR, Ingrid (Deutsches Elektronen-Synchrotron (DE)); Dr WHITE, Richard (University of Leeds)

Contribution ID: **18**

Type: **not specified**

## **Test automation of 3D integrated system**

*Tuesday, 16 July 2013 11:30 (1h 30m)*

**Presenter:** Dr PATERAS, Stephen (Mentor Graphics' Silicon Test Solution (USA))

Contribution ID: 19

Type: **not specified**

## **OUTREACH EVENT & PUBLIC LECTURE: "Future trends in Medical Imaging"**

*Wednesday, 10 July 2013 20:00 (1h 30m)*

Prof. D. Townsend, Director, A\*STAR-NUS Clinical Imaging Research Centre, SG.

The past few decades have witnessed tremendous progress in the development of instrumentation and techniques for medical imaging. From the radiographs and scintigraphy of the 1960s to the modern Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Single Photon Emission Computed Tomography (SPECT) and Positron Emission Tomography (PET) devices of today, greater and greater detail of the human body has been revealed non-invasively. Imaging is now widely used as an essential adjunct to clinical assessment for diagnosis and staging of human disease, and increasingly in the design of appropriate therapies and then monitoring response to these treatments. However, despite this tremendous progress in the performance of imaging instrumentation, the challenge remains one of early detection and accurate disease staging when a cure is still possible. This presentation will review recent progress in instrumentation for medical imaging and, in particular, the development of new hybrid designs that acquire dual modalities within a single device. Some speculation as to future trends in high performance medical imaging instrumentation will be offered.

**Presenter:** Prof. TOWNSEND, David (Clinical Imaging Research Center, Singapore)

Contribution ID: 22

Type: **not specified**

## **OUTREACH EVENT & PUBLIC LECTURE: Astronomy in 2033 : What we will (and won't) know about the Universe**

*Monday, 15 July 2013 20:00 (1h 30m)*

Astronomy is undergoing a quiet revolution - new telescopes and new techniques being built and developed right now will change our view of the Universe for good. In this lecture, Sky at Night presenter Chris Lintott will peer into the future and predict what we will - and won't - know in twenty years' time.

**Presenter:** Dr LINTOTT, Chris (University of Oxford)

Contribution ID: 23

Type: **not specified**

# **Molecular Imaging Modalities & Technologies: Lecture 1**

*Sunday, 14 July 2013 12:00 (1 hour)*

**Presenter:** Prof. LEVIN, Craig (Stanford University School of Medicine (USA))

Contribution ID: 24

Type: **not specified**

## **Molecular Imaging Modalities & Technologies: Lecture 2**

*Monday, 15 July 2013 12:00 (1 hour)*

**Presenter:** Prof. LEVIN, Craig (Stanford University School of Medicine (USA))



Contribution ID: 25

Type: **not specified**

## **Molecular Imaging Modalities & Technologies: Lecture3**

*Tuesday, 16 July 2013 10:15 (1 hour)*

**Presenter:** Prof. LEVIN, Craig (Stanford University School of Medicine (USA))

Contribution ID: 26

Type: **not specified**

## **OUTREACH EVENT & PUBLIC LECTURE: The after-Higgs discovery: vision on the Particle Physics strategy**

*Thursday, 11 July 2013 20:00 (1h 30m)*

Only a year has passed since the discovery of a new type of particle, the ‘Higgs Boson’, at the CERN Large Hadron Collider (LHC), the world’s highest-energy subatomic particle collider. The new boson weighs in with an impressive mass of about 125 GeV, and it is the last piece in the Standard Model jigsaw-puzzle of the elementary building blocks of matter and their interactions via forces of nature. However, the Higgs Boson discovery is a gateway to possibly even more exciting new physics processes that have been the subject of intense theoretical speculation. Is the new particle exactly the Higgs Boson of the Standard Model, or could it be the herald of radical theories such as Supersymmetry, which predict a shadow-world of new particles that mirrors our everyday atomic world. Only super-precise measurements of the couplings of the Higgs Boson to fermions and vector bosons will allow us to discriminate between the Standard Model and theories such as Supersymmetry. We will describe the intense particle physics programme that is taking shape to address these questions in the ‘Higgs era’. From 2015 LHC will run again at twice its starting energy and may we hope it will yield further spectacular discoveries. Meanwhile designs are converging for a high-energy electron-positron collider to serve as a ‘Higgs Factory’. And a new generation of experiments to study the ghostly neutrino is being planned.

**Presenters:** Prof. ROLANDI, Gigi (CERN & Scuola Normale Superiore Pisa); Prof. BURROWS, Philip (Oxford University)

Contribution ID: 27

Type: **not specified**

## **RACE: Mens sana in corpore sano**

*Friday, 12 July 2013 18:30 (1 hour)*

**Presenter:** ALL RUNNERS IN THE INFIERI 2013 SCHOOL DID IT, SEE THE DETAILS IN THE ATTACHED "LECTURE"

Contribution ID: 28

Type: **not specified**

## SAFETY BRIEFING

*Wednesday, 10 July 2013 14:00 (15 minutes)*

All students will be invited, at 2pm, right after lunch to attend this safety briefing as introduction to the computational and Lab classes.

Contribution ID: 29

Type: **not specified**

## **WELCOME on behalf of the Astrophysics Department**

*Wednesday, 10 July 2013 08:50 (10 minutes)*

**Presenter:** Prof. ROCHE, Patrick

Contribution ID: **30**

Type: **not specified**

## **Real-time data signal detection for pulsars and radio transients using GPUs**

*Monday, 15 July 2013 11:30 (30 minutes)*

**Presenter:** Dr ARMOUR, Wes (University of Oxford)

Contribution ID: 31

Type: **not specified**

## **Technologies for the Cerenkov Array (CTA) experiment**

*Thursday, 11 July 2013 14:30 (1 hour)*

**Presenter:** Prof. HINTON, Jim (University of Leicester (UK))

**Session Classification:** Parallel Session

Contribution ID: **32**

Type: **not specified**

## **Applications of the SiPMs technology**

*Thursday, 11 July 2013 15:30 (30 minutes)*

**Presenter:** Prof. CACCIA, Massimo (University of Insubria (IT))

**Session Classification:** Parallel Session



Contribution ID: 33

Type: **not specified**

# Instrumentation of a Level-1 Track Trigger in the ATLAS detector for the High Luminosity LHC

*Tuesday, 16 July 2013 14:10 (10 minutes)*

## Summary

**Presenter:** Dr PASTORE, Francesca (Royal Holloway, University of London)

**Session Classification:** Poster session

Contribution ID: **34**

Type: **not specified**

## poster 2

**Presenter:** Mr A, a (aaaa)

Contribution ID: 35

Type: **not specified**

## Poster 2

**Presenter:** Dr PRESENTER 2, Presenter 2 (Presenter Dep)

Contribution ID: **36**

Type: **not specified**

## Poster 3

**Presenter:** Dr PRESENTER 3, presenter 3 (Pres 3 dep)

Contribution ID: 37

Type: **not specified**

# Developing Homodyne Interferometers for Space Applications

*Tuesday, 16 July 2013 14:00 (10 minutes)*

## Summary

**Presenter:** Ms BRADSHAW, Miranda (University of Birmingham)

**Session Classification:** Poster session

Contribution ID: **38**

Type: **not specified**

## **The School Banquet at EXETER COLLEGE**

*Saturday, 13 July 2013 19:30 (1h 30m)*

The School banquet was held at the Exeter College and photos are posted here

Contribution ID: **39**

Type: **not specified**

## **TORCH: a Novel Cherenkov Detector for LHCb**

*Tuesday, 16 July 2013 14:20 (10 minutes)*

### **Summary**

**Presenter:** VAN DIJK, Maarten (CERN)

**Session Classification:** Poster session

Contribution ID: 40

Type: **not specified**

## **FPGA-Based L1 Pixel Trigger**

*Tuesday, 16 July 2013 14:30 (10 minutes)*

**Presenter:** SANTINI, Tales R.S. (USP-Sao Paulo, Brazil)

**Session Classification:** Poster session



Contribution ID: 41

Type: **not specified**

## **Development of Compton Camera Prototype for Hadrontherapy Monitoring and Medical Imaging**

*Tuesday, 16 July 2013 14:40 (10 minutes)*

**Presenter:** LEY, Jean Louis (IPNL-CNRS, Lyon, France )

**Session Classification:** Poster session

Contribution ID: 42

Type: **not specified**

## **CMS Binary Chip 2: Tracker readout with trigger primitives for the HL-LHC**

*Tuesday, 16 July 2013 14:50 (20 minutes)*

**Presenter:** BRAGA, Davide (FERMILAB)

**Session Classification:** Poster session

Contribution ID: 43

Type: **not specified**

# Development of High Rate Proton Range Radiography for Quality Insurance in Hadrontherapy

*Tuesday, 16 July 2013 15:00 (10 minutes)*

## Summary

**Presenter:** KIEFFER, Robert (University of London (GB))

**Session Classification:** Poster session

Contribution ID: 44

Type: **not specified**

## **Simulations of the SST-GATE Optical performance**

*Tuesday, 16 July 2013 15:10 (10 minutes)*

### **Summary**

**Presenter:** RULTEN, Cameron (LUTH, Observatoire de Paris, France)

**Session Classification:** Poster session