

**Implementing DRD7: an R&D  
Collaboration on Electronics  
and On-detector Processing.  
1st workshop**

**Report of Contributions**

Contribution ID: 1

Type: **not specified**

# Introduction

*Tuesday 14 March 2023 09:00 (1 hour)*

**Presenter:** Prof. NEWBOLD, Dave (STFC Rutherford Appleton Laboratory (GB))

Contribution ID: 2

Type: **not specified**

## High data rate ASICs

**Primary author:** KULIS, Szymon (CERN)

**Presenter:** KULIS, Szymon (CERN)

Contribution ID: 3

Type: **not specified**

## Prospects on High data rate ASICs

*Tuesday 14 March 2023 11:15 (20 minutes)*

This is tentative title of the presentation. The final title will be updated soon by the presenter.

**Presenter:** BIEREIGEL, Stefan (CERN)

**Session Classification:** Data Density

Contribution ID: 4

Type: **not specified**

## Prospects on New link technologies

*Tuesday 14 March 2023 10:55 (20 minutes)*

This is tentative title of the presentation. The final title will be updated soon by the presenter.

**Presenter:** PALLA, Fabrizio

**Session Classification:** Data Density

Contribution ID: 5

Type: **not specified**

## **Prospects on the Power and readout efficiency**

*Tuesday 14 March 2023 10:35 (20 minutes)*

This is tentative title of the presentation. The final title will be updated soon by the presenter.

**Presenter:** MICHELIS, Stefano (CERN)

**Session Classification:** Data Density

Contribution ID: 6

Type: **not specified**

## FE programmability

*Tuesday 14 March 2023 13:50 (15 minutes)*

**Presenter:** ANDORNO, Marco (CERN)

**Session Classification:** Intelligence on detector

Contribution ID: 7

Type: **not specified**

## **Intelligent power management**

*Tuesday 14 March 2023 14:10 (15 minutes)*

**Presenter:** CRESCIOLI, Francesco (Centre National de la Recherche Scientifique (FR))

**Session Classification:** Intelligence on detector



Contribution ID: 8

Type: **not specified**

## **Advanced data reduction techniques (ML, AI)**

*Tuesday 14 March 2023 13:30 (15 minutes)*

**Presenter:** DRUILLOLE, Frédéric (Saclay)

**Session Classification:** Intelligence on detector

Contribution ID: 9

Type: **not specified**

## High performance sampling (TDCs, ADCs)

**Presenter:** IDZIK, Marek (AGH Kracow)

**Session Classification:** 4D techniques

Contribution ID: 10

Type: **not specified**

## High precision timing distribution

**Presenter:** BARON, Sophie (CERN)

**Session Classification:** 4D techniques

Contribution ID: 11

Type: **not specified**

## Novel on-chip architectures

**Presenter:** LAI, Adriano (Universita e INFN, Cagliari (IT))

**Session Classification:** 4D techniques

Contribution ID: 12

Type: **not specified**

## **Radiation hardness - Introduction**

*Wednesday 15 March 2023 08:30 (5 minutes)*

**Presenter:** BORGHELLO, Giulio (CERN)

**Session Classification:** Extreme environments and longevity

Contribution ID: 13

Type: **not specified**

## **Cryogenic temperatures - Introduction**

*Wednesday 15 March 2023 09:30 (5 minutes)*

**Presenter:** DA ROCHA ROLO, Manuel Dionisio (Universita e INFN Torino (IT))

**Session Classification:** Extreme environments and longevity

Contribution ID: 14

Type: **not specified**

## **Reliability, fault tolerance, detector control**

**Session Classification:** Extreme environments and longevity

Contribution ID: 15

Type: **not specified**

## **On-detector cooling systems based on low-mass carbon dioxide evaporators**

*Wednesday 15 March 2023 09:05 (20 minutes)*

**Presenter:** HELLENSCHMIDT, Desiree (CERN)

**Session Classification:** Extreme environments and longevity



Contribution ID: 16

Type: **not specified**

## **Novel microelectronic technologies, devices, materials**

**Presenter:** FITZPATRICK, Conor (University of Manchester (GB))

**Session Classification:** Emerging technologies

Contribution ID: 17

Type: **not specified**

## Silicon photonics

**Presenter:** TROSKA, Jan (CERN)

**Session Classification:** Emerging technologies

Contribution ID: 18

Type: **not specified**

## **3D-integration and high-density interconnects**

**Presenter:** Dr CASELLE, Michele (KIT - Karlsruhe Institute of Technology (DE))

**Session Classification:** Emerging technologies

Contribution ID: 19

Type: **not specified**

## **Keeping pace with, adapting and interfacing to COTS**

**Presenter:** NEUFELD, Niko (CERN)

**Session Classification:** Emerging technologies

Contribution ID: 20

Type: **not specified**

**XXX**

**Presenter:** SNOEYS, Walter (CERN)

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 21

Type: **not specified**

**XXX**

**Presenter:** SEDGWICK, Iain

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 22

Type: **not specified**

**XXX**

**Presenter:** BARBERO, Marlon B. (CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 23

Type: **not specified**

## **Availability and access to advanced silicon technologies for the HEP community via the EURORACTICE services**

*Wednesday 15 March 2023 15:40 (20 minutes)*

**Presenter:** MALISSE, Paul (IMEC)

**Session Classification:** Technologies and tools



Contribution ID: 24

Type: **not specified**

## **Availability and access to modern EDA tools and IP block sharing in HEP community via the EURORACTICE services**

*Wednesday 15 March 2023 16:00 (20 minutes)*

**Presenter:** WILLOUGHBY, Mark

**Session Classification:** Technologies and tools

Contribution ID: 25

Type: **not specified**

## Test and Measure

**Session Classification:** Technologies and tools

Contribution ID: 26

Type: **not specified**

## Challenges in designing ASICs for High Energy Physics Experiments

*Wednesday 15 March 2023 16:20 (20 minutes)*

**Presenters:** PULLI, Adithya (CERN); LLOPART CUDIE, Xavi (CERN)

**Session Classification:** Technologies and tools

Contribution ID: 27

Type: **not specified**

## Going 4D: Timing Requirements Challenges

*Tuesday 14 March 2023 15:30 (10 minutes)*

In this part, we will discuss the challenges of specifying the timing requirements for high precision timing in detectors.

**Presenter:** BARON, Sophie (CERN)

**Session Classification:** 4D techniques

Contribution ID: 28

Type: **not specified**

## **Going 4D: High Precision Timing: Detector Simulation Challenges - an ATLAS HGTD perspective**

*Tuesday 14 March 2023 15:40 (10 minutes)*

**Presenter:** D'ERAMO, Louis (LPC - CNRS/IN2P3 (FR))

**Session Classification:** 4D techniques

Contribution ID: 29

Type: **not specified**

## Discussion

**Session Classification:** 4D techniques

Contribution ID: **30**

Type: **not specified**

## **4D for Trackers Challenges: an overview**

*Tuesday 14 March 2023 15:50 (10 minutes)*

**Presenter:** LAI, Adriano (Universita e INFN, Cagliari (IT))

**Session Classification:** 4D techniques

Contribution ID: **31**

Type: **not specified**

## **4D for Trackers Challenges: focus on the LHCb Velo Upgrade**

*Tuesday 14 March 2023 16:00 (15 minutes)*

**Presenter:** VAN BEUZEKOM, Martin (Nikhef National institute for subatomic physics (NL))

**Session Classification:** 4D techniques



Contribution ID: 32

Type: **not specified**

## 4D for Trackers Challenges: Discussion

**Session Classification:** 4D techniques

Contribution ID: 33

Type: **not specified**

## **4D for Calo Challenges: an overview**

*Tuesday 14 March 2023 16:15 (10 minutes)*

**Presenters:** IDZIK, Marek (AGH University of Science and Technology (PL)); ROBBE, Patrick (Université Paris-Saclay (FR))

**Session Classification:** 4D techniques

Contribution ID: 34

Type: **not specified**

## 4D for Calo Challenges: focus on LHCb ECAL Upgrade

*Tuesday 14 March 2023 16:25 (15 minutes)*

**Presenter:** BRETON, Dominique Robert (Université Paris-Saclay (FR))

**Session Classification:** 4D techniques

Contribution ID: 35

Type: **not specified**

## Discussion

*Tuesday 14 March 2023 16:40 (20 minutes)*

**Session Classification:** 4D techniques

Contribution ID: **36**

Type: **not specified**

## Introduction

*Wednesday 15 March 2023 13:30 (10 minutes)*

**Presenter:** BARBERO, Marlon B. (CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 37

Type: **not specified**

## Monolithic Sensors in ALICE

*Wednesday 15 March 2023 13:40 (15 minutes)*

**Presenter:** MAGER, Magnus (CERN)

**Session Classification:** Monolithic sensor ASICs

Contribution ID: **38**

Type: **not specified**

## **ALICE ITS3 - The unfashionable but important bits**

*Wednesday 15 March 2023 13:55 (15 minutes)*

**Presenter:** MOREL, Frederic (Centre National de la Recherche Scientifique (FR))

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 39

Type: **not specified**

## **Belle II VXD Upgrade**

*Wednesday 15 March 2023 14:10 (15 minutes)*

**Presenter:** BAUDOT, Jerome (IPHC - Strasbourg)

**Session Classification:** Monolithic sensor ASICs



Contribution ID: 40

Type: **not specified**

## TSI and Mightypix

*Wednesday 15 March 2023 14:25 (15 minutes)*

**Presenter:** PERIC, Ivan (KIT - Karlsruhe Institute of Technology (DE))

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 41

Type: **not specified**

## Longer Term R&D and Discussion

*Wednesday 15 March 2023 14:40 (20 minutes)*

**Presenter:** SNOEYS, Walter (CERN)

**Session Classification:** Monolithic sensor ASICs

Contribution ID: 42

Type: **not specified**

## **Cryogenic CMOS –Potential beyond quantum**

*Wednesday 15 March 2023 09:40 (20 minutes)*

**Presenter:** Dr VLIEX, Patrick (Forschungszentrum Juelich GmbH)

**Session Classification:** Extreme environments and longevity

Contribution ID: 43

Type: **not specified**

## **Introducing the challenges of collaborative work for future HEP experiments**

*Wednesday 15 March 2023 15:30 (10 minutes)*

**Presenters:** KLOUKINAS, Kostas (CERN); WILLOUGHBY, Mark; LLOPART CUDIE, Xavi (CERN)

**Session Classification:** Technologies and tools

Contribution ID: 44

Type: **not specified**

## Discussion

*Tuesday 14 March 2023 14:30 (30 minutes)*

**Session Classification:** Intelligence on detector

Contribution ID: 45

Type: **not specified**

## **TID and Challenges at Ultra-High Doses in Modern CMOS Technologies**

*Wednesday 15 March 2023 08:35 (20 minutes)*

**Primary author:** Dr BONALDO, Stefano (University of Padova)

**Presenter:** Dr BONALDO, Stefano (University of Padova)

**Session Classification:** Extreme environments and longevity

Contribution ID: 46

Type: **not specified**

## Discussion and Wrap Up

*Wednesday 15 March 2023 16:40 (20 minutes)*

**Presenters:** KLOUKINAS, Kostas (CERN); WILLOUGHBY, Mark; LLOPART CUDIE, Xavi (CERN)

**Session Classification:** Technologies and tools

Contribution ID: 47

Type: **not specified**

## Introduction: Cooling

*Wednesday 15 March 2023 09:00 (5 minutes)*

**Presenter:** DE AGUIAR FRANCISCO, Oscar Augusto (University of Manchester (GB))

**Session Classification:** Extreme environments and longevity



Contribution ID: 49

Type: **not specified**

## Challenges of Increasing Data Density

*Tuesday 14 March 2023 10:30 (5 minutes)*

introduction talk

**Co-authors:** FLOUZAT, Christophe (CEA Centre de Saclay); PRINZIE, Jeffrey; KULIS, Szymon (CERN)

**Presenters:** FLOUZAT, Christophe (CEA Centre de Saclay); PRINZIE, Jeffrey; KULIS, Szymon (CERN)

**Session Classification:** Data Density

Contribution ID: 50

Type: **not specified**

## Discussion about R&D for Data Density

*Tuesday 14 March 2023 11:35 (25 minutes)*

open discussion  
material to help discussion

**Co-authors:** Dr FLOUZAT, Christophe (CEA Centre de Saclay); PRINZIE, Jeffrey; KULIS, Szymon (CERN)

**Presenters:** Dr FLOUZAT, Christophe (CEA Centre de Saclay); PRINZIE, Jeffrey; KULIS, Szymon (CERN)

**Session Classification:** Data Density

Contribution ID: 51

Type: **not specified**

## Emerging Technologies Topic Introduction and Overview

*Wednesday 15 March 2023 10:30 (30 minutes)*

**Presenters:** FITZPATRICK, Conor (University of Manchester (GB)); TROSKA, Jan (CERN); Dr CASELLE, Michele (KIT - Karlsruhe Institute of Technology (DE)); NEUFELD, Niko (CERN)

**Session Classification:** Emerging technologies

Contribution ID: 52

Type: **not specified**

## Outcome of the Community Survey

*Wednesday 15 March 2023 11:00 (30 minutes)*

**Presenters:** FITZPATRICK, Conor (University of Manchester (GB)); TROSKA, Jan (CERN); Dr CASELLE, Michele (KIT - Karlsruhe Institute of Technology (DE)); NEUFELD, Niko (CERN)

**Session Classification:** Emerging technologies

Contribution ID: 53

Type: **not specified**

## Discussion

*Wednesday 15 March 2023 11:30 (30 minutes)*

**Session Classification:** Emerging technologies