



DRD1 - DRD4 interplay

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DRD1 Community Meeting

June 23rd, 2023

ECFA Roadmap for PID and Photodetectors



ECFA Roadmap for PID and Photodetectors



Areas of interplay:

Radiator materials

Fast timing

TRD

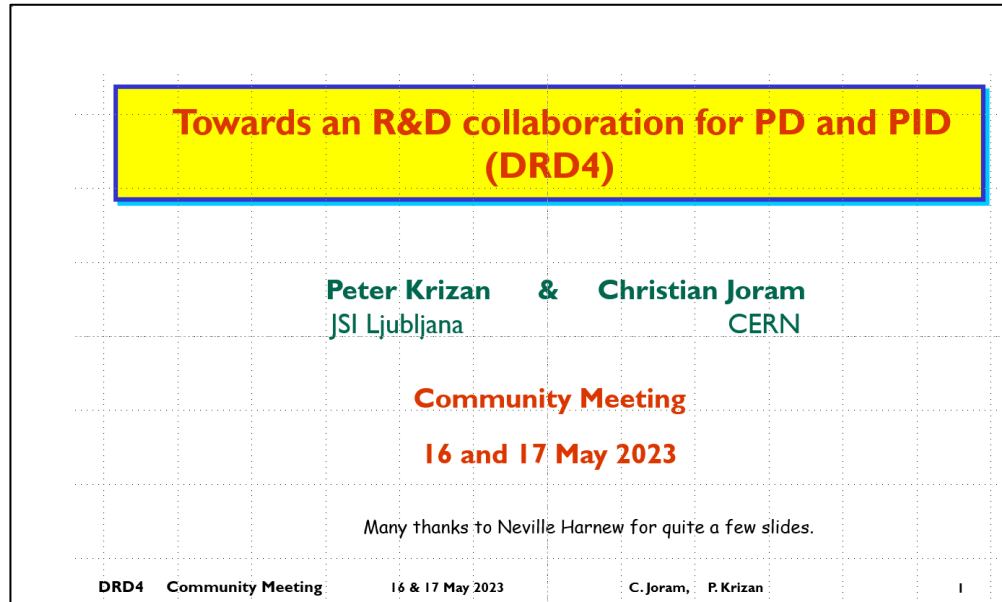
dE/dx

Gaseous photon detectors

● Must happen or main physics goals cannot be met ● Important to meet several physics goals ● Desirable to enhance physics reach ● R&D needs being met

DRD4 formation timeline

- DRD4 Community survey questionnaire 17.03.2023
- Deadline for Community survey questionnaire 14.04.2023
- DRD4 Community Meeting: CERN, 16-17 May 2023



Towards an R&D collaboration for PD and PID (DRD4)

Peter Krizan & Christian Joram
JSI Ljubljana CERN

Community Meeting
16 and 17 May 2023

Many thanks to Neville Harnew for quite a few slides.

DRD4 Community Meeting 16 & 17 May 2023 C. Joram, P. Krizan 1

The DRD4 structure

Structure and naming scheme of DRD4
ECFA panel. 07 June 2024

- **Coordinator**
- **WP leaders**
- **WG convenors**

Board of Institutes

Themes DRDT 4.1 and DRDT 4.2

Enhance the timing resolution and spectral range of photon detectors
Develop photosensors for extreme environments

Theme DRDT 4.3

Develop RICH and imaging detectors with low mass and high timing resolution

Theme DRDT 4.4

Develop compact high performance time-of-flight detectors

Work Packages

Solid state PD

- WP 4.1.1
- WP 4.1.2
- WP 4.1.3
- ...

Vacuum based PD

- WP 4.2.1
- WP 4.2.2
- WP 4.2.3
- ...

WP 4.3.1

WP 4.3.2

WP 4.3.3

...

WP 4.4.1

WP 4.4.2

WP 4.4.3

...

Work Packages

Working Groups

WG 4.1

Photodetector R&D
Solid state
Gaseous
Vacuum

WG 4.2

Particle ID
RICH
DIRC
TOP
TORCH
TOF

WG 4.3

Technologies
Radiators
Optical elements
Readout
Cooling
...

WG 4.4

Software
Simul
Recon
ML
...

WG 4.5

Special SciFi
TR (Solid state based)
...

WG 4.6

Future ideas, concepts, blue sky
...

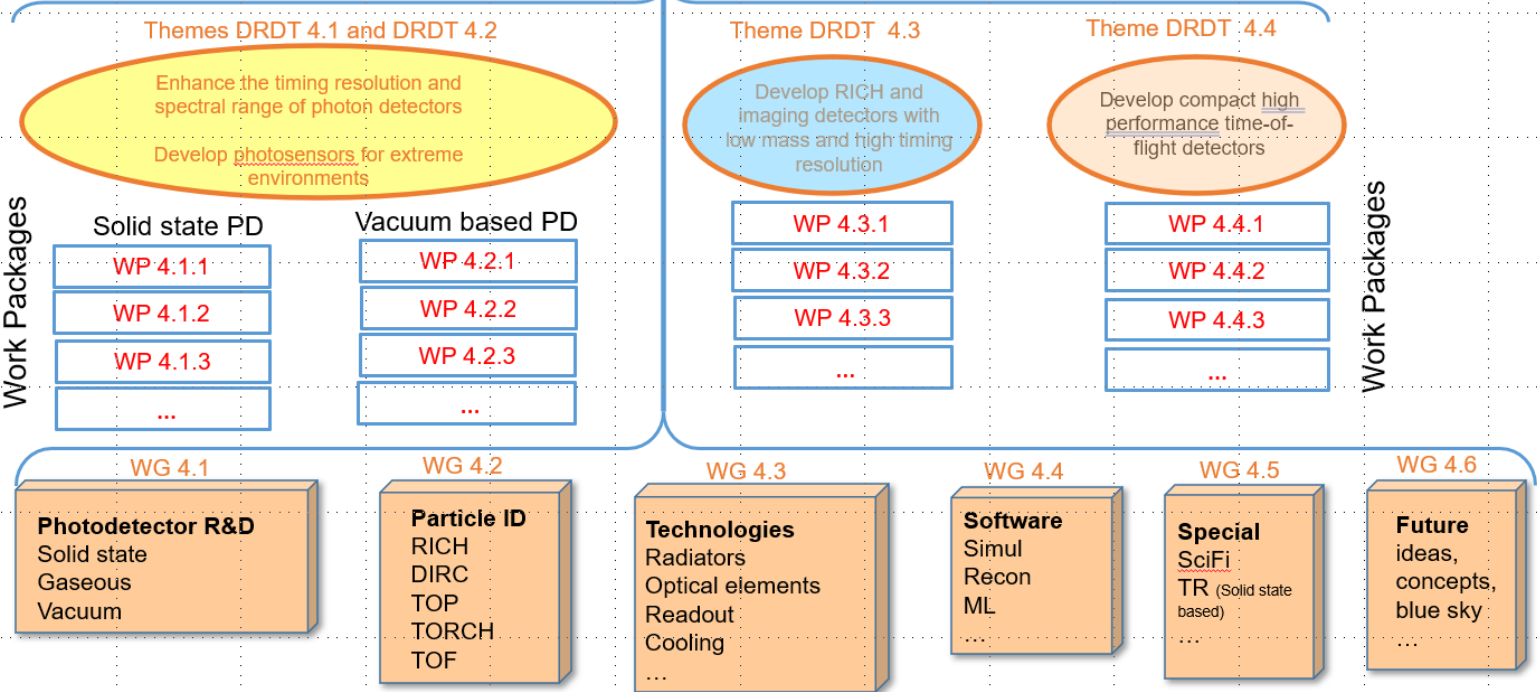
The DRD4 structure

... looks familiar

Structure and naming scheme of DRD4
ECFA panel. 07 June 2024

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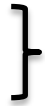
DRD4 formation timeline

- DRD4 Community Survey Questionnaire 17.03.2023
- Deadline for Community survey questionnaire 14.04.2023
- **DRD4 Community Meeting** CERN, **16-17.05.2023**
- DRD4 Institutes Survey 22.05.2023
- **DRD4 Community Update Meeting** zoom, **16.06.2023**
- Deadline for Institutes survey 25.06.2023
- **DRD4 Constitutional Meeting** zoom, **28.06.2023**

DRD1 – DRD4 interplay

- **Gaseous photon detectors:**

- Innovative detector architectures
- Innovative photoconverters



WP in DRD1 (common optical tools and techniques?)

- **TRD: One Group using SiPM for TRD in DRD4, the others in DRD1.**

- Synergies to be looked for?

- **dE/dx**

- **Fast Timing**

- **Radiator Materials: common gas studies? In which form?**

Studies of eco-friendly gas solutions: low GWP gases (NOVEC, etc.); leakless systems, recycle, purification, destruction; alternative solutions.