

DRD4

PARTICLE IDENTIFICATION AND PHOTON DETECTORS.

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as **INFN** in the **"DRD4 preparation team"**.

INFN

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Status

- Late start: mid May.
- Rush to have a preliminary proposal by July 31st.
- We stated that the fine-tuning of the proposal will be carried on **necessarily** during Q3/Q4 of 2023.
- Draft of the preliminary proposal circulated to DRD4 TL last week.
- Preliminary proposal will be submitted on July 31st.

Annex C: DRD4 preparation team

A team of volunteers from the DRD4 community agreed to prepare the proposal. Teams of two were attributed to the working groups and the themes. The success of the endeavour is to a large extent due to the active and motivated cooperation of this team. DRD4 thanks the colleagues listed below for their invaluable efforts in forming the collaboration and writing this proposal.

It was also agreed by the DRD4 community that the preparation team shall act as DRD4 collaboration management until the first collaboration meeting in early 2024, when the DRD4 collaboration will officially constitute.

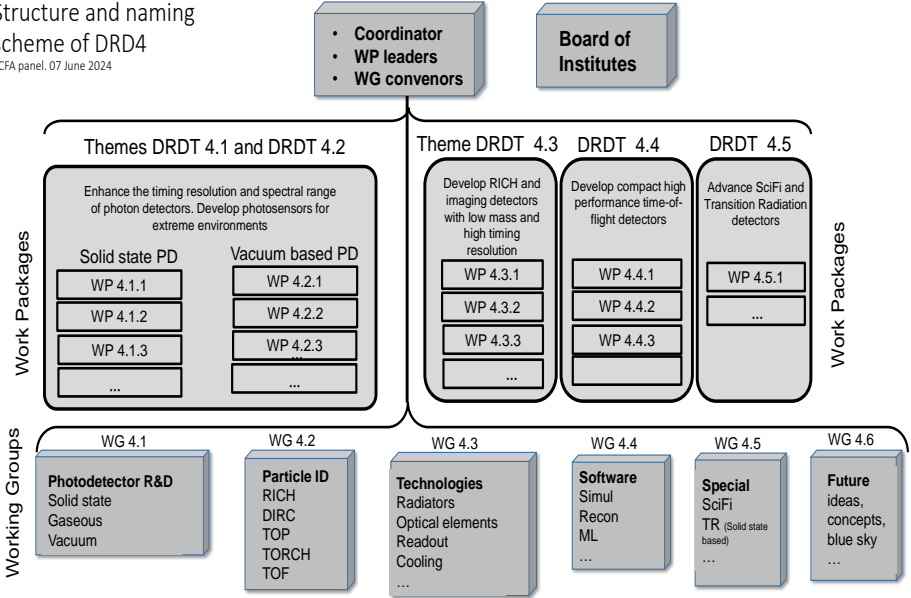
Name	institute	function
Sajan Easo	RAL, UK	WG4.4, WG4.2
Massimiliano Fiorini	Ferrara, IT	WG4.6, WP4.2
Silvia Gambetta	Edinburgh, UK	WP4.1 and WP4.2
Christian Joram	CERN, CH	WG4.2, WG4.5 and Coordinator
Peter Krizan	JSI, Ljubljana, SLO	WG4.1 and Coordinator
Imad Laktineh	IN2P3, Lyon, FR	WG4.6 and WP4.2
Jon Lapington	Leicester, UK	WP4.4
Blake Leverington	Heidelberg, D	WG4.5
Francesco Loparco	Bari, IT	WG4.5
Eugenio Nappi	Bari, IT,	WP4.4
Rok Pestotnik	JSI, Ljubljana, SLO	WG4.1, WP4.1
Alessandro Petrolini	Genova, IT	WG4.3, WP4.3
Fulvio Tassarotto	Trieste, IT	WG4.3, WP4.3

Table 2: DRD4 Preparation Team

Special thanks go to Roger Forty, CERN, CH, who supported the DRD4 preparation in the early phase but had to leave this effort when he was asked to become a member of the DRDC panel.

Structure and naming scheme of DRD4

ECFA panel. 07 June 2024



DRD4	DRDT 4.1 & DRDT 4.2	WP 4.1: Solid State Photo-Detectors (SSPD)	WP4.1.1 - SSPD with new configurations and new modes. WP4.1.2 - Fast radiation hard SiPMs. WP4.1.3 - Timing of SSPD – including the appropriate readout electronics. WP4.1.4 - Novel sensor materials.
		WP 4.2: Vacuum-based Photo-Detectors (VPD)	WP4.2.1 - VPD: New materials, new coatings, longevity and rate capability studies. WP4.2.2 - VPD-PMT: New photocathode materials, structure and high quantum efficiency VPD. WP4.2.3 - VPD time and spatial resolution performance.
	DRDT 4.3	WP 4.3: RICH and other imaging detectors	WP4.3.1 - New Materials Radiators and Components. WP4.3.2 - Development of new RICH detector concepts for improved performance. WP4.3.3 - Prototype Single-Photon Sensitive Module for Imaging Arrays from sensor to DAQ and self-calibration systems. WP4.3.4 - Study of RICH detectors for the FCC. WP4.3.5 - Software and Performance.
	DRDT 4.4	WP 4.4: Time Of Flight Detectors	WP4.4.1 - Study the coupling of a thin Cherenkov radiator to a single-photon detector array, for TOF of charged particles. WP4.4.2 - Develop a SiPM array for single-photon detection, with mm-scale pixellization, suitable for use in TOF prototypes. WP4.4.3 - Develop lightweight mechanical supports for DIRC-type TOF detectors. WP4.4.4 - Develop techniques for measuring the optical properties of optical components for TOF detectors.
		WP 4.5 SciFi tracking and Transition Radiation Detectors	WP4.5.1 - Develop an improved radiation hard scintillating fibre with a fluorescence decay time near 4 ns.

IMP Institute	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.3.1	4.3.2	4.3.3	4.3.4	4.3.5	4.4.1	4.4.2	4.4.3	4.4.4	4.5.1
Aachen																	
Banbridge			X												X		
Bari 1								X	X				X	X			
Bari 2																	
Beijing IMP						X	X			X							
Beijing USTC							X	X	X						X	X	
Birmingham					X												
Bologna	X	X	X														
Bristol					X			X				X	X				
Bucharest		X							X	X							
Cambridge							X	X	X			X					
CEA																	
CERN																	
CERN ALICE		X											X	X			
CERN EP								X				X					X
CERN LHCb	X	X	X					X	X	X	X	X					X
CERN SY-BI														X			
Darmstadt																	
Edinburgh					X	X	X										
Erlangen					X			X	X								
FBK		X	X						X	X			X	X			
FERMILAB	X		X														
Ferrara		X	X	X	X		X	X	X	X							
Genova	X	X	X							X							
Georgia										X	X		X				
Glasgow	X									X	X	X					
Glasgow							X	X	X								
Gronoble																	
GSCAH																	
Heidelberg																	X
INFN			X			X			X	X			X	X			
INFN team	X																
Inns		X		X	X	X											
Istebina							X									X	
Lausanne																	X
Leicester					X		X		X	X				X			
Ljubljana			X		X		X	X				X					
London IC							X										
London OUK							X										
Lyon						X	X										
Marseille																	
Marseille								X									
Marseille Inqam													X	X			
Maryland	X			X													
Michigan	X		X	X													
Milano Bicocca										X	X						
Milano Statale	X																
Moscow																	
Nagoya		X			X		X										
Omega			X				X										
Osaka								X	X	X					X	X	
Padova B2		X			X				X	X							
Padova LHCb																	
Perugia		X	X						X	X						X	
Pratich					X	X	X										
Protonia																	
Prague FZU																	
Prague RAP CTU																	
RAL													X				
Seoul		X		X				X									
Tokyo		X	X					X	X	X	X						
Torino																	
Virginia													X				
Warwick					X		X										
Wuppertal																	X
Yokohama																	
Zurich																	

END

- Some critically important "themes" seem to be missing from the submissions: we have to look around to invite expert people/groups.
 - Some concerns that in some cases proposed activities are limited to one experiment: to be fixed, in order to target the goal of the process of developing synergies and exchanging competences,...
 - A number of superpositions among activities inside DRD4 will be fixed with the fine-tuning phase during Q3/Q4 2023.
 - A consultation/information process with relevant activities in other DRDs must be organized and resolution of possible superpositions or missing key activities with DRDs must be setup.
 - For readout electronics: it is a key topic for many activities: in DRD4 we agreed for a coordination made via the WG Technological Activities and for a common interactions from/to DRD7.
 - The previously planned DRD8 on integration will now not go ahead and the individual DRD projects will have to take care of their own mechanical/thermal engineering,...
- We need strong support for thermo-mechanical engineering from the agencies!**
Can INFN consider, for instance, to establish an **engineering support team**?

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