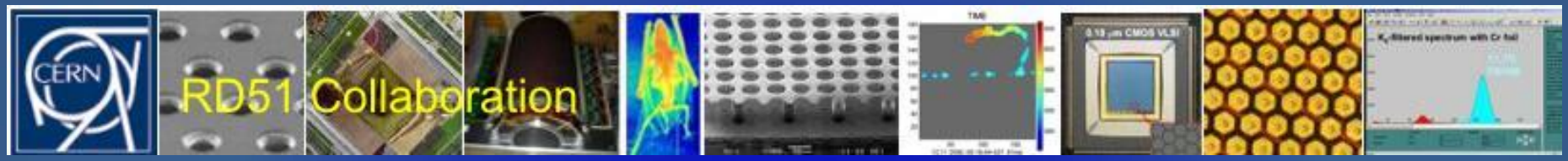


Community and Expertize

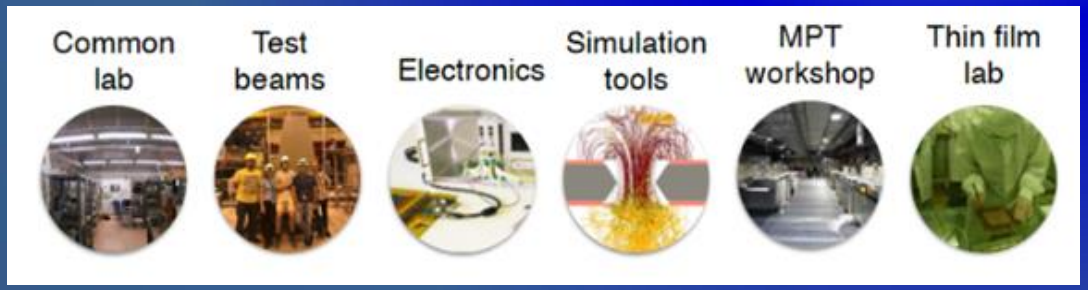
RD51:

3 MAJOR ASSETS

RD51 Collaboration News and Communications

MPGD Technology Development & Dissemination

R&D Tools, Facilities and Infrastructure



Eraldo Oliveri (CERN)
Maxim Titov (CEA Saclay)

RD51 Collaboration Mini-Week,
CERN, February 27-28, 2023

RD51 Management Structure for 2023:

- ***Co-Spokesperson*** *– Eraldo Oliveri, Maxim Titov*
- ***Spokesperson Advisors*** *– Leszek Ropelewski, Silvia Dalla Torre*

- ***CB Chair*** *– Shikma Bressler*
- ***CB Deputy Chair*** *– Jochen Kaminski*

- ***Scientific Secretary*** *– Atsuhiko Ochi*

- ***Technical Coordinator:*** *Florian Brunbauer*

- ***Management Board*** *– Amos Breskin, Paul Colas, Klaus Dehmelt, Yannis Giomataris, Supratik Mukhopadhyay, Emilio Radicioni, Yorgos Tsipolitis, Joao Veloso, Andy White, Silvia Dalla Torre, Leszek Ropelewski, Atsuhiko Ochi, Shikma Bressler, Jochen Kaminski, Hans Taureg, Florian Brunbauer, Eraldo Oliveri, Maxim Titov*

- ***Changes to WG conveners:***
  - WG2: Piotr Gasik replacing Florian Brunbauer
  - New WG8 (Training and Dissemination): Florian Brunbauer, Mauro Iodice

- ***Co-Chairs of the RD51-DRD1 Review Panel:*** *Andy White, Emilio Radicioni, Paul Colas*

- *All RD51 WG conveners are members of the DRD1 WGs participating in the preparation of the DRD1 Kick-off workshop at CERN on Mar. 1-3, 2023*

RD51 Collaboration Calendar & Events:

- ✓ *RD51 Mini-Week (Feb. 27-28, 2023) @ CERN: https://indico.cern.ch/event/1242811/*
- ✓ *DRD1 kick-off workshop (Mar. 1-3, 2023) @ CERN: https://indico.cern.ch/event/1245751/*
- ✓ *RD51 Collaboration Meeting (Jun. 19-23) @ CERN*
- ✓ *3rd "International Conference on Detector Stability and Aging Phenomena in Gaseous Detectors" (Nov. 6-10, 2023) @ CERN: https://indico.cern.ch/event/1237829*
- ✓ *RD51 Micro-Pattern Gaseous Detector School (Nov. 27 – Dec. 1, 2023) @ CERN: https://indico.cern.ch/event/1239595/*
- ✓ *RD51 Collaboration Meeting (Dec. 4-8) @ CERN*
- ✓ *RD51 Test-Beam (proposed dates, under discussion with GIF++ and SPS Coordinator): Week 17 + 18, Week 27 + 28, Week 34 + 35*

- ✓ *2023: CERN wants to conduct a review of the finances of all existing collaborations (an opportunity to settle financial transition from RD51 to DRD1)*
- ✓ *2024: 8th MPGD Conference in China (dates to be fixed)*

2022 RD51 Annual Review by the LHCC Committee

151st LHCC Meeting - OPEN Session (Sep. 14, 2022): https://indico.cern.ch/event/1192325/

CERN/LHCC-2022-014
LHCC-151
September 2022

LARGE HADRON COLLIDER COMMITTEE

Preliminary Minutes of the one-hundred-and-fifty-first meeting held on

Wednesday and Thursday, 14-15 September 2022

OPEN SESSION – STATUS REPORTS

1. Status of the Accelerator: Andrea Calia
2. ALICE Status Report: Ante Bilandzic
3. ATLAS Status Report: Ten Jian Khoo
4. RD50 Status Report: Gianluigi Casse
5. RD51 Status Report: Maksym Titov
6. LHCb Status Report: Violaine Bellee
7. CMS Status report: Alex Tapper

17. Report on RD51

The RD51 collaboration is dedicated to the study of micro-pattern gaseous detectors. The collaboration has a wide range of activities, some of which are of central importance for the recently installed LHC detectors. Some activities, such as the R&D on MPGDs are receiving attention also in view of the detector development for the future Elector-Ion Collider. In general, RD51 has a very visible role in training and dissemination, as well as community-building in the area of gaseous detectors.

RD51 operates common facilities at CERN that enables the community to undertake research in this area: the Gaseous Detectors Development (GDD) laboratory and a semi-permanent setup at the SPS H4 test beamline. The collaboration requests continued support by CERN on the current level on these facilities as well as access to CERN facilities such as the Micro-Pattern Technologies workshop and Thin Film and Glass Laboratory, access to computing resources for modelling and simulation tools and general office space and administrative support.

- The **LHCC congratulates** RD51 on the progress made in all areas and on the new results obtained.
- The **LHCC recommends** continuing the support for RD51, and **notes** that the CERN contribution in terms of both person power and access to facilities is crucial for the collaboration.

19. General Comments on RD Collaborations

A discussion on the implementation of the ECFA Detector R&D Roadmap has been held with RD50 and RD51. While the following comments are primarily in the context of these two collaborations, they are generally relevant for all RD collaborations.

RD50 and RD51 have expressed concerns about the transition process towards new DRD collaborations to be established in the course of the implementation of the ECFA Detector R&D roadmap. The proposed timeline, with new collaborations established by the beginning of 2024 is seen as very ambitious. The expiration of existing MoUs before the new schemes are fully operational is a significant concern, since this may impact the continuity of common funds, running projects and existing contracts. Concerns are also expressed about the size and scope of the new collaborations, which each should cover the full topics of one of the task forces in the roadmap process, and may result in larger administrative overhead inside of the collaboration, and possibly reduced coherence of the research program.

- The **LHCC recognizes** the concerns expressed by RD50 and RD51 on the implementation of the ECFA Detector R&D Roadmap, but also notes that a timely implementation is important for the R&D landscape in Europe leading up to the next update of the European Strategy for Particle Physics.
- The **LHCC identifies** as a key strength of both RD50 and RD51 the scheme of a modest common fund supplied by collaboration contributions of each institute, which supports common R&D activities which in turn leverage own contributions of the institutes and of the funding agencies. The **LHCC recommends** that continuity in this area is maintained in the transition period, to ensure that investments made in common funds and common projects by the current member institutes remain accessible and usable also beyond the transition to the new structure.
- The **LHCC notes** that for the R&D community to be able to deliver proposals on the time scale envisioned, the scope of the proposals will need to be defined and communicated in the near future, before the end of 2022. The level of detail required needs to be appropriate to the level of information on resources available and the level of planning and community building achievable in the time available. In the definition of the scope of the proposals the existing R&D collaborations should be involved, together with the ECFA task force conveners and other stakeholders.
- The **LHCC supports** the transition of the reviewing of R&D activities from the LHCC to a new, dedicated committee, and suggests that the RD review in 2023 is organized as a common review by the LHCC and the new panel. In view of this, the **LHCC does not foresee to request** proposals for a possible extension of the existing RD collaborations beyond 2023.

7th MPGD Conference, Weizmann Institute (Dec. 12-16, 2022)

We sincerely THANK YOU – Shikma Bressler, Amos Breskin, the entire Weinzmann team, and to all conference participants for such a memorable in-person (after COVID) event

Today: RD51 Mini-Week (February 27-28, 2023)

Opportunity to consolidate inputs from the RD51 community and discuss WG-related topics relevant in a view of the DRD1 kick-off workshop on March 1-3: https://indico.cern.ch/event/1242811/

Monday, 27 February 2023

RD51 Communications and News - 30/7-018 - Kjell Johnsen Auditorium (10:00 - 10:30)
-Conveners: Eraldo Oliveri; Maksym Titov

WG1 - Technological Aspects and Development of New Detector Structures - 30/7-018 - Kjell Johnsen Auditorium (10:30 - 12:00)
-Conveners: Filippo Resnati; Paul Colas

time	[id] title	presenter
10:30	[330] The Micro Resistive Groove detector	HE, Si qi ZHOU, Yi ZHOU, Yi
10:55	[329] Charge spreading by DLC in resistive anode Micromegas in T2K/ND280 TPC.	HASSANI, Samira
11:20	[331] Limitations and perspectives in wire chambers, straw tubes, TGC, CSC, etc...	WINTZ, Peter WINTZ, Peter

WG2 - Detector Physics and Performance - 30/7-018 - Kjell Johnsen Auditorium (14:00 - 15:30)
-Conveners: Francisco Ignacio Garcia Fuentes; Piotr Gasik

time	[id] title	presenter
14:00	[351] Micro-pixel chamber with photo readout	OCHI, Atsuhiko
14:25	[352] Resistive pixelated Micromegas: time performance studies	CAMERLINGO, Maria Teresa
14:50	[353] PICOSEC for the muon Collider detector	FIORINA, Davide

Coffee break - 30/7-018 - Kjell Johnsen Auditorium (15:30 - 16:00)

WG4 - Modelling of Physics Processes and Software Tools - 30/7-018 - Kjell Johnsen Auditorium (16:00 - 18:00)
-Conveners: Ozkan Sahin; Rob Veenhof; Piet Verwilligen

time	[id] title	presenter
16:00	[340] SWEATERS project - MC Simulations of Micromegas at low pressures - status report	PILO, Federico
16:20	[344] DRD1 Preparation - Discussion Intro	VERWILLIGEN, Piet
16:30	[342] DRD1 Preparation - Garfield++ future	SCHINDLER, Heinrich
16:40	[347] DRD1 Preparation - NeBEM & Comsol simulations	MUKHOPADHYAY, Supratik MUKHOPADHYAY, Supratik
16:50	[343] DRD1 Preparation - Simulation of Resistive Detectors	JANSSENS, Djunes
17:00	[345] DRD1 Preparation - Discharge modelling & simulation	GASIK, Piotr
17:10	[341] DRD1 Preparation - Charge recombination modelling	GONZALEZ DIAZ, Diego GOMEZ, Faustino GOMEZ, Faustino
17:20	[350] DRD1 Preparation - Scintillation simulation in Garfield++	
17:30	[346] DRD1 Preparation - MPGD FastSim	FARINELLI, Riccardo
17:40	[348] DRD1 Preparation - Ion Clustering and Ion drift - Penning	
17:50	[349] DRD1 Preparation - Negative Ions	

Tuesday, 28 February 2023

WG5 - Electronics for MPGD - 6/2-024 - BE Auditorium Meyrin (09:00 - 10:30)
-Conveners: Jochen Kaminski; Hans Muller

Coffee break - 6/2-024 - BE Auditorium Meyrin (10:30 - 11:00)

WG7 - Common Test Facilities - 6/2-024 - BE Auditorium Meyrin (11:00 - 11:30)
-Conveners: Eraldo Oliveri; Yorgos Tsipolitis

WG8 Training and Dissemination - 6/2-024 - BE Auditorium Meyrin (11:30 - 12:00)
-Conveners: Florian Maximilian Brunbauer; Mauro Iodice

RD51 Collaboration Board - 6/2-024 - BE Auditorium Meyrin (12:00 - 13:00)

Topical Session on CERN Workshops - 31/3-004 - IT Amphitheatre (14:00 - 17:30)
-Conveners: Rui De Oliveira; Fabien Jeanneau

time	[id] title	presenter
14:00	[332] Introduction	DE OLIVEIRA, Rui
14:05	[333] BE-CEM-EPR Electronics Service	BERBERAT, Raphael
14:25	[334] BE-CEM-EPR Electronics Assembly Workshop	KAUFMANN, Sylvain
14:45	[335] Skills and fabrication facilities available in EN-MME	GUARDIA VALENZUELA, Jorge
15:05	coffee break	
15:30	[336] Surface treatments & Thin film coatings in TE-VSC-SCC	TABORELLI, Mauro
16:10	[337] Chemicals and surface analysis at TE-VSC-SCC	HIMMERLICH, Marcel
16:30	[338] CERN EP Thin Film & Glass service	SCHNEIDER, Thomas
16:50	[339] Materials engineering and inspection facilities at CERN: the EN-MME-MM section	SGOBBA, Stefano

- ***A topical session on CERN workshops is organized by Ru De Oliveira and the WG6 conveners on Feb. 28 afternoon***
- ***RD51 CB Meeting on Feb. 28 , 1-2pm CEST***

European Strategy for Particle Physics: Implementation of the ECFA Detector R&D Roadmap

Following the publication of the ECFA Detector R&D Roadmap (https://cds.cern.ch/record/2784893), CERN Council has mandated ECFA (CERN/SPC/1190) to initiate the formation of new Detector Research and Development (DRD) Collaborations, anchored at CERN, to strengthen the strategic, long-term research in various detector technologies and their applications beyond 2026.

CERN/SPC/1190
CERN/3679
Original: English
29 September 2022

ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Action to be taken		*Voting Procedure*
For information	**SCIENTIFIC POLICY COMMITTEE** 330th Meeting **26-27 September 2022**	-
For information	**RESTRICTED COUNCIL** 209th Session **29 September 2022**	-

EUROPEAN STRATEGY FOR PARTICLE PHYSICS
DETECTOR R&D ROADMAP

In the context of the implementation of the 2020 update of the European Strategy for Particle Physics, the European Committee for Future Accelerators (ECFA) was mandated by the CERN Council in 2020 to develop a detector R&D roadmap. The 2021 ECFA Detector Research and Development Roadmap was presented to the Council at its meeting in December 2021 and the Council invited ECFA to elaborate a detailed implementation plan.

ECFA hereby invites the Council to take note of the implementation plan that has been developed, as set out in annex 1 of this document.

Annex 1

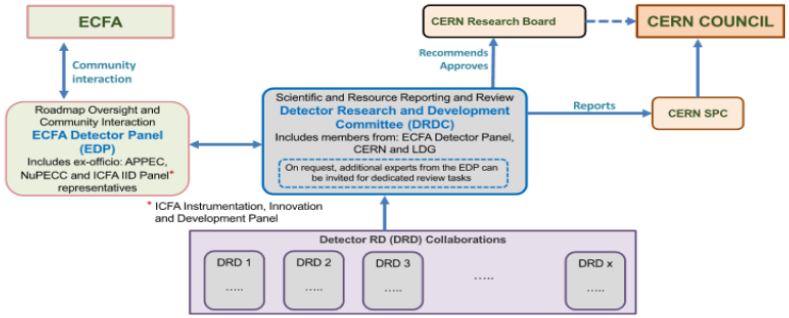
Proposed Implementation Plan for the 2021 ECFA Detector Research and Development Roadmap

For each of the technology areas considered, the 2021 ECFA Detector Research and Development Roadmap[1] (hereinafter referred to as the Roadmap) has identified major detector R&D themes (DRDTs) where longer-term research must be carried out, in most cases directed towards experiments at large future facilities with earlier experiments as important "stepping stones". A major guideline was to define the requirements and milestones such that detector R&D would not be the limiting factor in establishing the next large research projects envisaged on timescales extending well beyond the High-Luminosity LHC programme.

In addition, community themes have been developed, some of which are reflected in the general strategic recommendations (GSRs) that must also be addressed in the coming years.

1. Establishment of DRD Collaborations at CERN

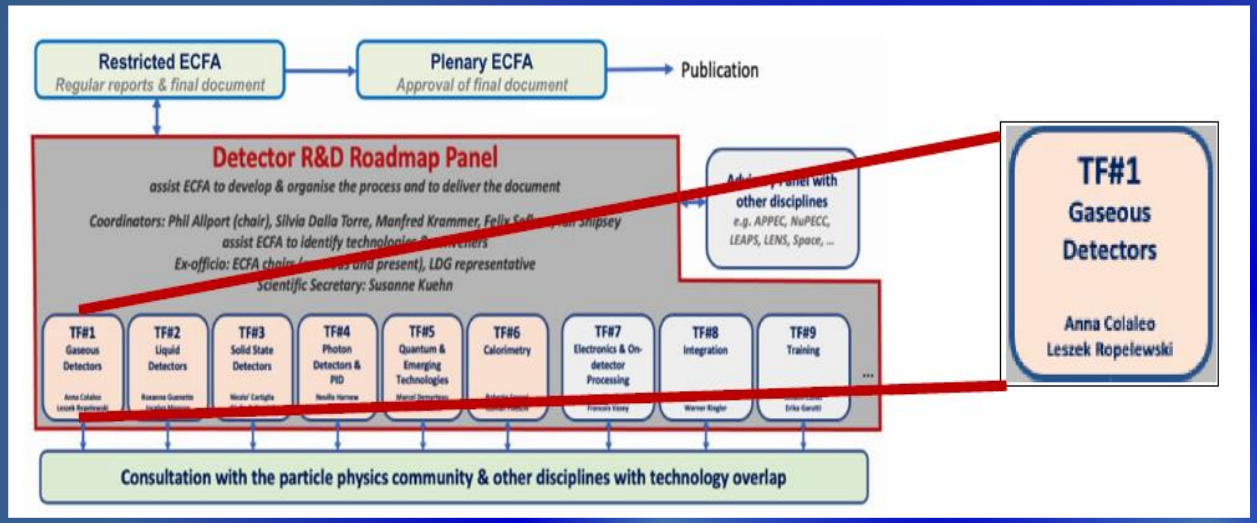
It is proposed that the long-term R&D efforts be organised into newly established Detector R&D (**DRD**) collaborations, as illustrated below, following the model of the well-known and very successful RD collaborations established in the early 1990s to address the huge challenges posed by the construction of the LHC detectors.



Proposed organisational structure for implementation of the Roadmap (the arrows indicate the reporting lines)

- In the detector area, larger DRD collaborations should be considered. The proposal is that such collaborations be established to address each of the six detector technology areas identified in the Roadmap. This would guarantee a critical mass of institutes, expertise and effort, thereby avoiding too much fragmentation. It would also keep the administrative support and reviewing requirements to a manageable level. For the cross-cutting areas of electronics and integration, one or two further DRD collaborations should be anticipated; they should pick up on specific themes, but not necessarily be mapped directly onto the TF topic areas.
- In addition, the community themes identified in the area of training must be addressed. However, for these, alternative implementation steps are needed, as discussed later in this document.

Towards DRD1 (Gaseous Detectors) Collaboration



- ✓ ***Coordinated by the ECFA Detector R&D TF1 Conveners: Anna Colaleo and Leszek Ropelewski***
- ✓ ***Taking advantage of RD51 experience***

A dedicated DRD1 WG has been formed *(regular weekly meetings since Nov. 2022):*

- ✓ **ECFA TF1 Conveners**: *Anna Colaleo, Leszek Ropelewski*; **TF1 Members**: *Klaus Dehmelt, João Veloso*
- ✓ **ECFA Coordinators Group Member**: *Silvia Dalla Torre*
- ✓ **MPGDs**: *Eraldo Oliveri, Fulvio Tessarotto, Maxim Titov*
- ✓ **RPCs**: *Ingo Deppner, Giuseppe Iaselli, Barbara Liberti*
- ✓ **TPCs**: *Esther Ferrer Ribas, Jochen Kaminski*
- ✓ **Large volume detectors LDC**: *Marco Panareo, Francesco Renga*
- ✓ **Straw tubes, TGC, CSC, drift chambers, and other wire detectors:** *Peter Wintz*
- ✓ **Infrastructure, detector R&D programmes (CERN EP R&D, AIDAinnova)**: *Roberto Guida, Beatrice Mandelli*
- ✓ **Administrative support**: *Florian Brunbauer, Hans Taureg*

Towards DRD1 Collaboration Structure: WG & Conveners

Keep RD51 structure in WGs including alignment with the scientific program of the ECFA roadmap, looking more generally to future facilities challenges and specifically to the ECFA Roadmap selected Detector RD Themes (DRDT)

WG1: Technologies (**P. Colas**, F. Resnati, P. Wintz, I. Deppner, M. Tytgat, L. Moleri)

Includes exp. detector physics aspects

- MPGD
- RPC and MRPC
- Wire chambers (incl. Straws, TGC, CSC, ..)
- Large Volume Detectors (drift chambers, TPCs)
- New amplifying structures

WG2: Applications (F. Garcia, **P. Gasik**, F. Grancagnolo, D. Gonzalez Diaz, G. Aielli, G. Pugliese; A. Colaleo, M. Titov for the ECFA part)

Full alignment with the ECFA detector R&D roadmap (DRDT topics)

- Muon systems
- Inner and central tracking with particle identification capability
- Calorimetry
- Photon detection
- Time of Flight systems
- TPCs for rare event searches
- Fundamental research applications beyond HEP
- Medical and industrial applications

WG3: Gas and material studies – New (**B. Mandelli**, G. Morello, F. Renga, K. Dehmelt, S. Roth,D, Piccolo, A. Pastore, B. A. Gonzalez)

- Gas Properties (e.g. cross-section, chemical characterization, measurements); light emission in gas
- Eco-gases studies
- Gas systems, gas recuperation/recirculation systems
- Sealed detectors and systems
- Resistive electrodes
- Solid converters; PCs (novel, aging, protection)
- Novel materials (e.g. nanomaterials)
- Material properties for detector and infrastructures
- Low material budget materials; precise mechanics
- Aging, Radiation hardness, Outgassing

WG4: Detector physics, simulations, and software tools (O. Sahin, **P. Verwilligen**, R. Veenhof, P. Fonte, M. Abbrescia, M. Borysova)

- Detector Physics (modeling and simulations)
- Detector Performance Studies (modeling and simulations)
- Software development and maintenance
- Gas Properties Databases (e.g. cross-sections) - Use and/or Maintenance; Detector design

Towards DRD1 Collaboration Structure: WG & Conveners

WG5: Electronics for gaseous detectors (H. Muller, **J. Kaminski,** M. Gouzevitch, R. Cardarelli)

- Analog/Digital Electronics
- Discrete Readout Front End Electronics and ASICs
- Charge/Photon readout
- FE input protection & spark quenching
- Waveforms and Digitizer; Signal Processing
- Cluster Counting
- Specific needs: Timing, High rate, Low noise, Wide Dynamic Range,…)
- Grounding and Shielding; Calibration
- SoC based sensor readout
- General purpose DAQ, FPGA based readout/trigger and Trigger-less systems
- HV Systems and HV distribution schemes
- LV Powering, Cooling
- Laboratory instrumentation (High resolution floating ammeters, Monitoring and control systems)

WG8: Training and dissemination (**F. Brunbauer**, M. Iodice, E. Baracchini, B. Liberti, A Paoloni)

- Schools and trainings
- Topical workshops
- Knowledge transfer
- (Young) Researcher Career
- Strategies to recognize and sustain the careers of R&D experts

WG6: Detector production (R. De Oliveira, **F. Jeanneau,** A. Delbart, G. Iaselli, I. Laktineh, G. Charles)

- CERN EP-DT Micro Pattern Technology (MPT) Workshop
- Saclay MPGD workshop
- RPC/MRPC workshop
- Wire chambers workshop
- Novel detector production methods
- CERN EP Thin Film & Glass service (photocathodes, coatings, ceramic)
- Technology and knowledge transfer (to industry and within the collaboration)
- Relationship with Industry

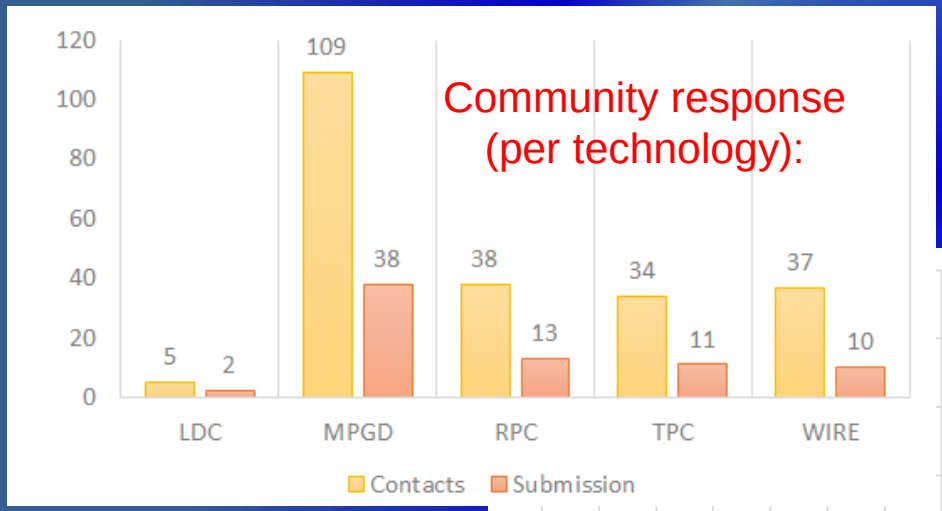
WG7: Common test facilities (**Y. Tsipolitis**, E. Oliveri, R. Guida, G. Iaselli, A. Ferretti)

Includes development of common detector characterization standards:

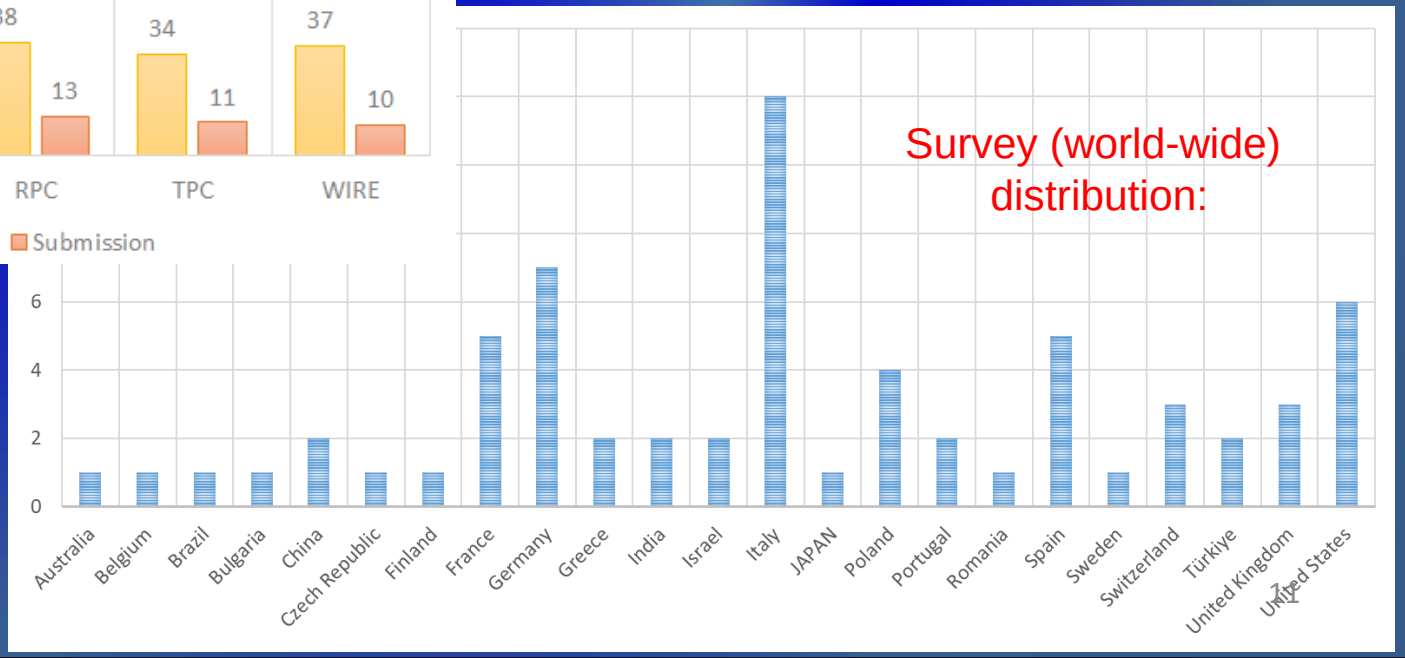
- General purpose detector development labs
- Ageing Study Facility
- Gas studies facility
- Irradiation facility
- Test beam facility
- Chemistry and material laboratory
- Clean Room
- Instrumentation for common detector characterization (e.g. gas, DAQ, HV systems)

Towards DRD1 Collaboration: Mailing List and Survey

- ✓ *A major effort: reaching out to as many major groups in the field as possible: TF1 (all Gaseous detectors) mailing list (registration in Indico): 256 person*
  - → *If you wish to subscribe to the DRD1 Mailing list (it's never late): Implementation of TF1 Gaseous Detectors: https://indico.cern.ch/event/1214405/*
- ✓ *A survey sent to the institute contact persons to get feedback from the community*
  - → *About 220! institute representatives – many beyond Europe*



Original survey deadline – February 15:
69 institutes answered (30%)
→ results will be presented during the DRD1 kick-Off workshop (March 1-3)



If your (RD51) group did not answer, please complete DRD1 survey by May 1 (to be included into DRD1 proposal)

DRD1 Kick-Off Meeting @ CERN: March 1-3, 2023

The main goal of the process is to build "community-driven" DRD1 gaseous detector collaboration and accepted by DRDC

Wednesday/Thursday, March 1 -2:

- ✓ *General Introduction - ECFA roadmap & roadmap implementation*
- ✓ *General survey outcome*
- ✓ ***WG1-WG8 (1 hour per session):***
  - WG1 Technologies
  - WG2 Applications
  - WG3 Gas and Material Studies
  - WG4 Detector Physics, Simulations, and Software Tools
  - WG5 Electronics for Gas Detectors
  - WG6 Detector Production
  - WG7 Common Test Facilities
  - WG8 Training and Dissemination
- ✓ ***Collaboration issues:***
  - *MoU and Common Fund(s)*
  - *Common Projects*
  - *Work Packages*
  - *Structure of the DRD1 Collaboration*

Charge to the WG Conveners:

1. *Introduction to the topics covered by the WG (listed in the Skeleton bullets).*
2. *Analysis and summary of the Survey.*
3. *Essential aspects from the Survey with relevance/impact in the context of the collaboration (topics, facilities, ideas).*
4. *Existing assets that can support the collaboration.*
5. *Existing or potential assets that the collaboration can support.*
6. *Synergies and common aspects between technologies.*
7. *For WG2 (applications), overlap with the ECFA roadmap document.*

Friday, March 3:

- ✓ Wrap-up (Open and Closed) Discussions
- ✓ Proposal drafting (Skeleton with bullets)
- ✓ Identification of an editorial team for the
- ✓ proposal writing

DRD1 ("All Gaseous") Collaboration: Implementation Timeline

DRD's Collaboration Timeline, as established by ECFA Detector R&D Roadmap Panel:

Goal: Transition to new scheme during 2023

- approval of LHC-oriented RD50 (silicon), RD51 (gas detector) collaborations expires Dec 2023

Major Steps:

- **community input** (via existing R&D bodies where possible) by **Q1 2023**
  - To get involved, register at https://indico.cern.ch/event/957057/page/27294-implementation-of-the-ecfa-detector-rd-roadmap
- Work Package **structure** (Tasks, Participants, Resources, Deliverables, Milestones) by **spring 2023**
- In parallel, **DRDC** mandate and membership defined
- Written **proposals**, based on ECFA Detector Roadmap, by **mid 2023**
  - do not repeat roadmap; concrete plans, deliverables, resource-loaded (not a wish list) for **period 2024-2030**
  - aim at 20 pages per each of 9 the DRDs (or not much more)
- **Review** (by DRDC, assisted by EDP) in **fall 23,** approval by **end 2023**
- R&D collaborations **operational**, "Grant Agreements" (**MoU** signatures) through **2024**

Challenge

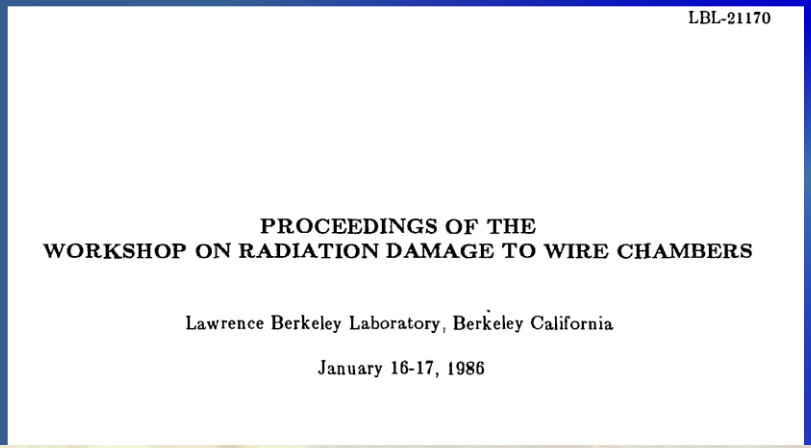
- funding not exactly known - but cost projections should be backed by Funding Agencies
- interaction with Agencies needed in parallel to proposal preparation

Tentative (Internal) DRD1 timeline (proposal tbd @ DRD1 Kick-off meeting on Mar. 1-3):

- *Community consultation till May 1st (Survey remains open until that date)*
- *Final editing till the middle of June & community meeting presentation of the proposal*
- *Submit proposal that reflects the needs and aspirations of our community and fulfill*
- *technology goals outlined in ECFA R&D roadmap document in July*

3rd "International Conference on Detector Stability and Aging Phenomena in Gaseous Detectors (Nov. 6-10, 2023)

The conference will continue the initiative started in 1986 with the 1st workshop held at LBNL (Berkeley) and the 2nd one in 2001 at DESY (Hamburg).


LBL-21170

PROCEEDINGS OF THE
WORKSHOP ON RADIATION DAMAGE TO WIRE CHAMBERS

Lawrence Berkeley Laboratory, Berkeley California

January 16-17, 1986

https://www.desy.de/agingworkshop

3rd Aging Workshop Nov. 6-10, 2023 @ CERN: https://indico.cern.ch/event/1237829

The tentative list of topics will include:

- ✓ Detector stability and performance
- ✓ Aging phenomena
- ✓ Radiation hardness
- ✓ Material outgassing
- ✓ Novel materials
- ✓ Electrodes
- ✓ Photocathodes
- ✓ Plasma chemistry
- ✓ Environmentally friendly gases
- ✓ Gas and material analysis, characterisation, instruments
- ✓ Discharge damage and mitigation
- ✓ Test facilities
- ✓ Front End Electronics for detector stability and aging mitigation

- ***Organizing and Program Committees have been set up***
- ***First announcement sent through the rd51-all mailing list → more details coming soon***

2023:RD51 Micro-Pattern Gaseous Detector School (new WG8)

Nov. 27 – Dec. 1, 2023 @ CERN: https://indico.cern.ch/event/1239595

- ✓ ***Focus: state-of-the-art MPGD Technologies***
- ✓ ***Target:*** *PhD students and young scientists working on gas detectors or entering the field.*
- ✓ ***Program comprises: morning lectures*** *offering an overview on gas detectors physics, MPGD technologies, simulation and modelling, readout approaches, manufacturing techniques as well as applications, and hands-on exercises on various technologies in the afternoons*
- ✓ ***Application requirements****: Letter of support, Motivation to attend school, Laboratory experience (incl. instrumentation)*
- ✓ ***Application deadline: June 30, 2023*** *(admission to the school is limited)*
- ✓ *The school is supported by the RD51 Collaboration to offer free registration for students. Accommodation, travel and other expenses have to be covered by the participants.*

Draft Layout of MPGD School:

The morning lectures sessions are open to the community and can be followed in-person or by remote connection.

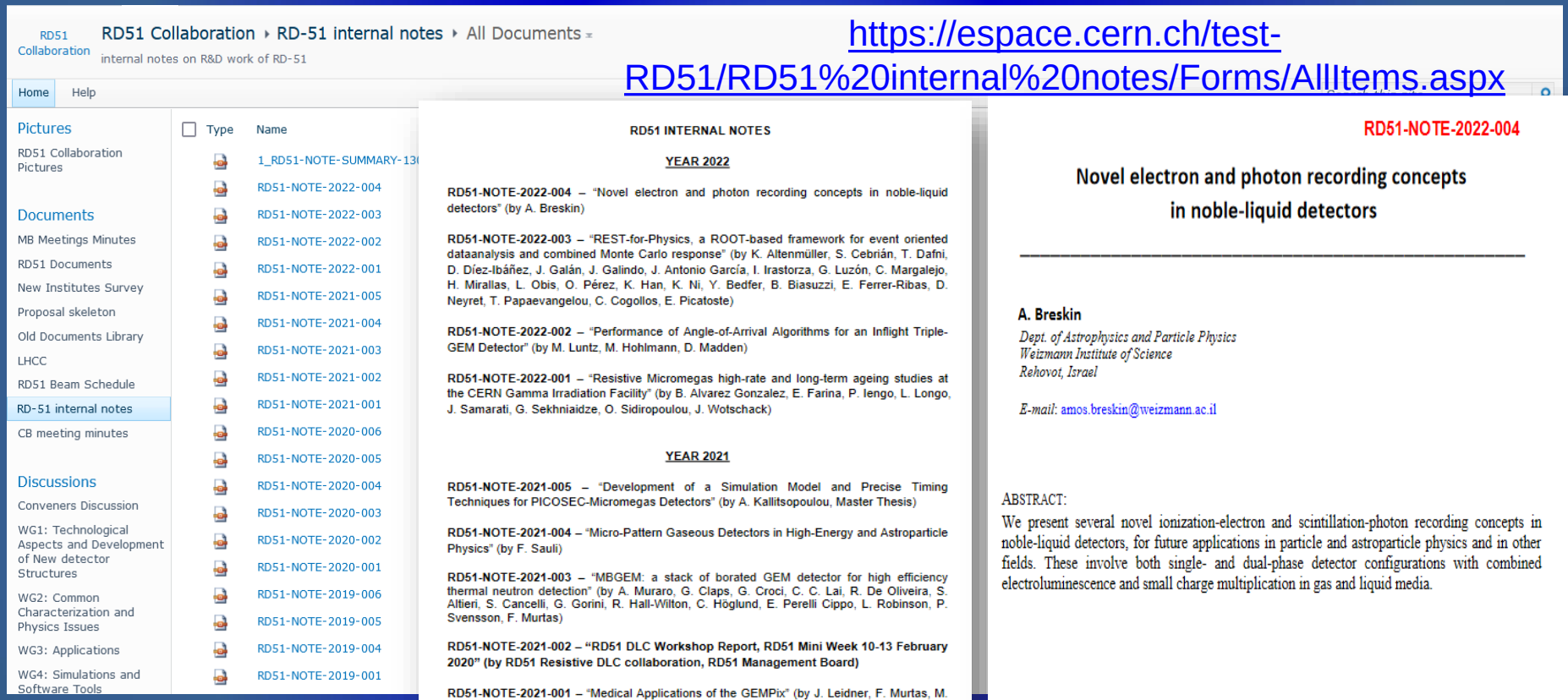
	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 10:00	Introduction: Gas detectors	Gas detector physics 2	Manufacturing techniques	Electronic readout techniques	MPGDs in HEP applications
10:00 - 11:00	Gas detector physics 1	MPGD technologies 2: resistive electrodes, spark protection	Visit 1	Pixellated readout techniques / Optical and hybrid readout techniques	Applications beyond HEP: nuclear physics, dark matter searches, neutrino physics
11:00 - 11:30	Break	Break	Break	Break	Break
11:30 - 12:30	MPGD technologies 1	Modelling and simulation	Visit 2	Visit 3	Applications beyond fundamental research
12:30 - 14:00	Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
14:00 - 18:00	Lab session	Lab session	Lab session	Lab session	Lab session
		Student poster session			

RD51 Scientific Network & Dissemination

Updated RD51 website: https://rd51-public.web.cern.ch/

Young Researcher Career (Job opportunities): https://rd51-public.web.cern.ch/jobs

The "know-how" dissemination is also supported via the series of the RD51 Internal Notes (> 100 in total)



https://espace.cern.ch/test-RD51/RD51%20internal%20notes/Forms/AllItems.aspx

RD51 INTERNAL NOTES

YEAR 2022

RD51-NOTE-2022-004 – "Novel electron and photon recording concepts in noble-liquid detectors" (by A. Breskin)

RD51-NOTE-2022-003 – "REST-for-Physics, a ROOT-based framework for event oriented dataanalysis and combined Monte Carlo response" (by K. Altenmüller, S. Cebrián, T. Dafni, D. Díez-Ibáñez, J. Galán, J. Galindo, J. Antonio García, I. Irastorza, G. Luzón, C. Margalejo, H. Mirallas, L. Obis, O. Pérez, K. Han, K. Ni, Y. Bedfer, B. Biasuzzi, E. Ferrer-Ribas, D. Neyret, T. Papaevangelou, C. Cogollos, E. Picatoste)

RD51-NOTE-2022-002 – "Performance of Angle-of-Arrival Algorithms for an Inflight Triple-GEM Detector" (by M. Luntz, M. Hohlmann, D. Madden)

RD51-NOTE-2022-001 – "Resistive Micromegas high-rate and long-term ageing studies at the CERN Gamma Irradiation Facility" (by B. Alvarez Gonzalez, E. Farina, P. Iengo, L. Longo, J. Samarati, G. Sekhniaidze, O. Sidiropoulou, J. Wotschack)

YEAR 2021

RD51-NOTE-2021-005 – "Development of a Simulation Model and Precise Timing Techniques for PICOSEC-Micromegas Detectors" (by A. Kallitsopoulou, Master Thesis)

RD51-NOTE-2021-004 – "Micro-Pattern Gaseous Detectors in High-Energy and Astroparticle Physics" (by F. Sauli)

RD51-NOTE-2021-003 – "MBGEM: a stack of borated GEM detector for high efficiency thermal neutron detection" (by A. Muraro, G. Claps, G. Croci, C. C. Lai, R. De Oliveira, S. Altieri, S. Cancelli, G. Gorini, R. Hall-Wilton, C. Höglund, E. Perelli Cippo, L. Robinson, P. Svensson, F. Murtas)

RD51-NOTE-2021-002 – "RD51 DLC Workshop Report, RD51 Mini Week 10-13 February 2020" (by RD51 Resistive DLC collaboration, RD51 Management Board)

RD51-NOTE-2021-001 – "Medical Applications of the GEMPix" (by J. Leidner, F. Murtas, M. Silari)

YEAR 2020

RD51-NOTE-2020-006 – "Report on DLC Applications" (by A. Valentini)

RD51-NOTE-2020-005 – "Development of Micromegas detectors with resistive pads" (M. Chefdeville, C. Drancourt, N. Geffroy, T. Geralis, A. Kalamaris, Y. Karyotakis, D. Nikas, F. Peltier, A. Psallidas, M. Titov, G. Vouters)

RD51-NOTE-2022-004

Novel electron and photon recording concepts in noble-liquid detectors

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ABSTRACT:

We present several novel ionization-electron and scintillation-photon recording concepts in noble-liquid detectors, for future applications in particle and astroparticle physics and in other fields. These involve both single- and dual-phase detector configurations with combined electroluminescence and small charge multiplication in gas and liquid media.

KEYWORDS: Noble liquid detectors (scintillation, ionization, double-phase); Dark Matter detectors (WIMPs, axions, etc.); Neutrino detectors; Micropattern gaseous detectors (MSGC, GEM, THGEM, RETHGEM, MHSP, MICROPIC, MICROMEGAS, InGrid, etc.);

Encourage to share your results via RD51 internal notes