

# RD51 Collaboration News

Leszek Ropelewski, CERN Switzerland / Maxim Titov, CEA Saclay France

## International Workshop on Advanced Detectors IWAD 2014 & 14<sup>th</sup> RD51 Collaboration Meeting

October 2014:

October 27 - 31, 2014  
Kolkata  
India

Sponsor  
Board of Research in Nuclear Science  
Department of Atomic Energy

Advanced gaseous detectors play a major role in modern day particle physics experiments. As spinoff they also find wide range of applications in the areas of medical imaging, radiography among others. In this regard a two-day International Workshop on Advanced Detectors (IWAD) is being organized during 27-28 October 2014 at VECC-SINP campus, Kolkata, INDIA. The workshop would be followed by 14<sup>th</sup> RD51 collaboration meeting at the same venue.

### Local Organizing Committee

Sudhee R. Banerjee VECC  
Subhasis Chattopadhyay VECC  
(Chairman)  
Sukalyan Chattopadhyay SINP  
Supriya Das BI  
Anand K. Dubey VECC  
(Convener)  
Nayana Majumdar SINP  
Supratik Mukhopadhyay SINP  
(Co-Chairman)  
Tapan K. Nayak VECC  
Lalit M. Pant BARC  
Satyaji Saha SINP  
Vikas Singhal VECC

### Contact

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Variable Energy Cyclotron Center (VECC)  
Department of Atomic Energy  
1AF, Bidhan Nagar, Kolkata – 700064, India  
Phone : +91 33 2368 3406 / 2410  
Fax : +91 33 2334 6821

### Registration

No Registration Fee for RD51 Collaboration Members

For others

Indian Participants Faculties : ₹ 2000/- Students : ₹ 1000/-  
Foreign Participants Faculties : USD 60 Students : USD 30

### Areas to be covered in the workshop

27 - 28 October, 2014

#### • Micropattern Gas Detectors (MPGD)

#### • Resistive Plate Chambers (RPC)

#### • Applications of advanced detectors in High Energy Physics

#### • Medical and other applications of advanced detectors

### International Advisory Committee

Amos Breskin Weizmann Inst. Sc., Israel  
Sunanda Banerjee SINP, India  
Giovanni Beniceni LNF-INFN, Italy  
Rakesh K. Bhandari IUAC, India  
Sudesh Bhattacharya SINP, India  
Bikas K. Chakraborty SINP, India  
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Klaus Desch Bonn University, Germany  
Ioannis Giomataris CEA Saclay, France  
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Naba K. Mondal TIFR, India  
Sibaji Raha Bose Institute, India  
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Hans Taureg CERN, Switzerland  
Maxim Titov CEA Saclay, France  
Silvia Dalla Torre Trieste Univ. & INFN, Italy  
Yogendra P. Viyogi VECC, India  
Andy White Univ. of Texas, Arlington, USA

For participation in IWAD please send one page abstract to

rd51india@vecc.gov.in  
on or before  
August 15, 2014.

October 2015:

4TH INTERNATIONAL CONFERENCE ON MICRO PATTERN GASEOUS DETECTORS - MPGD2015 - TRIESTE, 12-15 OCTOBER 2015  
RD51COLLABORATION MEETING ON 16-17 OCTOBER 2015

INFN

MPGD 2015

TOPICS

NEW DEVELOPMENTS IN MPDGs  
PRODUCTION TECHNIQUES  
MATERIAL AND AGEING TESTS  
MPGD DETECTOR PHYSICS

SIMULATION AND SOFTWARE  
ELECTRONICS  
APPLICATIONS

INTERNATIONAL ORGANIZING COMMITTEE

ALESSANDRO CARDINI (INFN, CAGLIARI)  
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IOANNIS GIOMATARIS (CEA, SACLAY)  
TATSUO KAWAMOTO (ICEPP, TOKYO)  
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MINETS POKHRE (BONAVOS, BNL)  
LESZEK ROPELEWSKI (CERN)  
ARJUNA SHARMA (CERN)  
MAXIM TITOV (UNIVERSITY OF TEXAS, ARLINGTON)  
ANDY WHITE (UNIVERSITY OF TEXAS, ARLINGTON)  
JOSEF WOTSCHACK (CERN)

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GIOVANNI BENICENI (INFN, LNF)  
AMOS BRESKIN (WEIZMANN INSTITUTE)  
PAUL COLAS (CEA, SACLAY)  
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TAKESHI MITSUDA (KEK)  
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WOLFGANG RIEBEL (CERN)  
FABIO SAULI (IFERA FOUNDATION)  
TORU TANIMORI (KITANO UNIVERSITY)

LOCAL ORGANIZING COMMITTEE

GIOVANNI BENICENI (INFN, LNF)  
GABRIELLA CATANEI (INFN, BAR)  
SILVIA DALLA TORRE (INFN, TRIESTE)  
BENIGNO GOBBO (INFN, TRIESTE)  
STEFANO LEVORATO (INFN, TRIESTE)  
FULVIO TESSAROTTO (INFN, TRIESTE)

SECRETARIAT

ERICA NOVACKO (INFN, TRIESTE)

HTTP://MPGD2015.TS.INFN.IT

MPGD@TS.INFN.IT

15<sup>th</sup> RD51 Collaboration Meeting, CERN, March 16-20, 2015

# International Workshop on Advanced Detectors (Oct. 27-28, 2014)



“Warm Welcome Address” from the VECC and SINP officials and fantastic conference organization



Many young scientists & excellent presentations



Coffee break discussions – ohhh ... well how to improve these MPGD detectors ?



International Workshop on Advanced Detectors  
SI VEP-IBET Collaborative Meeting  
27-31 October 2014  
Variable Energy Cyclotron Centre  
Kolkata, India

# 2014 RD51 Collaboration Meetings and Communications:

- ❖ February 3-5: RD51 Electronics School (CERN) - <https://indico.cern.ch/event/283113>
- ❖ February 5-7: RD51 Collaboration Meeting (CERN) - <https://indico.cern.ch/event/283108>
- ❖ June 4: RD51 Report to the LHCC (CERN) - <https://indico.cern.ch/event/319702>
- ❖ June 16-20: RD51 Mini-Week (CERN) - <https://indico.cern.ch/event/323839>
- ❖ July 21: Special Event - Georges Charpak - 90th Anniversary (Lviv, Ukraine) - “CERN 60 Years of Science for Peace” - <https://indico.cern.ch/event/331478/overview>
- ❖ October 27-28: International Workshop on Advanced Detectors (Kolkata, India) - <http://indico.vecc.gov.in/indico/conferenceTimeTable.py?confId=31#20141027>
- ❖ October 29-31: RD51 Collaboration Meeting (Kolkata) - <https://indico.cern.ch/event/348222>
- ❖ December 8-12: RD51 Mini-Week (CERN)  
<https://indico.cern.ch/event/356113/other-view?view=standard>

## RD51 Communications:

➤ RD51 Collaboration Meetings Agenda:

<http://rd51-public.web.cern.ch/RD51-Public/Meetings/CollaborationMeetings.html>

➤ Collaboration Board Minutes:

<https://espace.cern.ch/test-RD51/CB%20meeting%20minutes/Forms/AllItems.aspx>

➤ Management Board Minutes:

<https://espace.cern.ch/test-RD51/MB%20meetings/Forms/AllItems.aspx>

# WG3: 14-15 October 2013: 1<sup>st</sup> RD51 Academia – Industry Matching Event

## “Special Workshop on Neutron Detection with MPGDs”

**RD51-NOTE-2014-003**

arXiv:1410.0107

Prospects in MPGDs development for neutron detection

Bruno Guerard (ILL), Richard Hall-Wilton (ESS), Fabrizio Murtas (INFN & CERN)

Summary based on presentations during RD51

Accademia-Industry Matching Event, CERN October 14-15, 2013

RD51-NOTE-2014-003

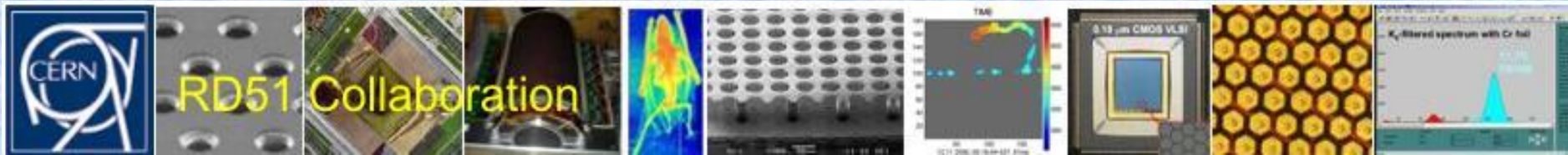


➤ MPGDs might contribute significantly to the development of neutron scientific instrumentation

➤ Evaluate the prospects of neutron MPGDs → discuss applications which would benefit from a gain in performance, and if they could offer a competitive alternative to conventional <sup>3</sup>He detectors

➤ Goal was to help disseminating MPGD technologies beyond HEP, and to give the possibility to academic institutions, potential users and industry to meet together.

Instrument	Detector Technology						
	<sup>10</sup> B	Thin Films	Scintillators	<sup>3</sup> He	Micropattern		
	⊥		WLS	Anger		Rate	Resolution
Multi-Purpose Imaging	-	-	-	-	-	o	+
General Purpose Polarised SANS	o	+	-	+	o	+	-
Broad-Band Small-Sample SANS	o	+	-	+	-	+	-
Surface Scattering	o	+	-	+	o	+	-
Horizontal Reflectometer	-	o	-	+	+	o	-
Vertical Reflectometer	-	o	-	+	+	o	-
Thermal Powder Diffractometer	o	+	+	-	-	o	-
Bi-Spectral Powder Diffractometer	o	+	+	-	-	o	-
P-M Powder Diffractometer	o	+	+	-	-	o	-
MS Engineering Diffractometer	o	+	+	-	-	o	-
Extreme Conditions Diffractometer	o	+	+	-	-	o	-
Single Crystal Diffractometer	o	+	+	-	-	o	-
Macromolecular Diffractometer	-	o	o	o	-	+	+
Cold Chopper Spectrometer	+	o	o	-	-	-	-
Bi-Spectral Chopper Spectrometer	+	+	o	-	-	-	-
Thermal Chopper Spectrometer	+	+	+	-	-	-	-
Cold Crystal Analyser Spectrometer	-	o	-	+	+	-	-
Vibrational Spectrometer	-	o	-	o	+	-	-
Backscattering Spectrometer	-	o	-	+	+	-	-
High-Resolution Spin Echo	-	o	-	o	+	+	-
Wide-Angle Spin Echo	-	o	-	o	+	+	-
Fundamental & Particle Physics	-	-	-	-	+	+	+



# CERN Globe (March 16, 17, 2015): 2<sup>nd</sup> RD51 Academia – Industry Matching Event “Special Workshop on Neutron Detection with MPGDs”

Sincere gratitude to: Bruno Guerard, Richard Hall-Wilson, Fabrizio Murtas for the organization / coordination of the scientific program

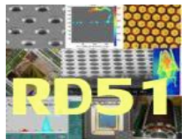
Jean-Marie Le Goff and Antonio Pacheco for the CERN-HEPTech coordination

## Academia-Industry Matching Event Special Workshop on Neutron Detection with MPGDs

14-15 October 2013  
 CERN  
 Europe/Zurich timezone

- Event Description
- Detailed agenda
- Registration
  - [Registration Form](#)
- Participant List
- Call for Abstracts
  - [View my Abstracts](#)
  - [Submit Abstract](#)
- Evaluation
  - [Evaluation Form](#)
- How to get CERN
- List of Recommended Hotels
- 12th RD51 Collaboration Meeting
- Organising Committee
- Photos



The specialized workshop "Neutron Detection with Micro-Pattern Gaseous Detectors" organised by RD51 in collaboration with HEPtech, will take place at CERN on October 14-15, 2013.

**The goal of the workshop is to help disseminating MPGD technologies beyond fundamental physics, where academic institutions, potential users and industry could meet together.**

The shortage of the Helium-3 in the world brings new challenges to neutron detection, especially in the areas of homeland security, non-proliferation, neutron scattering science and other fields. Micro-Pattern Gaseous Detectors offer attractive alternative solutions for neutron detection, compared to Helium-3 based proportional counters. Moreover, this event provides a platform for discuss prospects of the MPGD use for the thermal and fast neutron detection, commercial requirements and possible solutions. This workshop aims to foster collaboration between the particle physics community and the industry of neutron detectors, and to discuss the potential of the MPGD technologies for the field. This event is jointly organized by the RD51 collaboration, the HEPtech Network and CERN KT Group. It is open to all researchers and commercial partners interested or working in the field of neutron detection.

**Dates:** 14 PM to 15 AM October 2013  
**Venue:** The Globe, CERN  
 Route de Meyrin 385, 1217 Meyrin

## Academia-Industry Matching Event Second Special Workshop on Neutron Detection with MPGDs

16-17 March 2015  
 CERN  
 Europe/Zurich timezone

- Event Description
- Detailed agenda
- Registration
- Participant List
- How to get CERN
- List of Recommended Hotels
- 15th RD51 Collaboration Meeting
- Organising Committee



# 16-17 March 2015: 2<sup>nd</sup> RD51 Academia – Industry Matching Event

## “Special Workshop on Neutron Detection with MPGDs”

Academia-Industry Matching Event  
Second Special Workshop on Neutron Detection with MPGDs

16-17 March 2015  
CERN

Event Description  
Detailed agenda  
Registration  
Participant List  
How to get CERN  
List of Recommended Hotels  
15th RD51 Collaboration Meeting  
Organising Committee



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Dates: 16 to 17 March 2015  
Venue: The Globe, CERN  
Route de Meyrin 365, 1217 Meyrin



- ❖ 16 Presentations
- ❖ CERN-KT report
- ❖ 6 Industrial Partners
- ❖ Round Table Discussion

<https://indico.cern.ch/event/365840/other-view?view=standard>

# Workshop on Detector Technologies in a view of the FCC-hh

RD51 has been invited to make a report on potential use of MPGDs for the FCC-hh

Workshop on requirements for future detector technologies in view of FCC-hh  
chaired by Ludovico Pontecorvo (Universita e INFN, Roma I (IT))  
from Tuesday, 3 February 2015 at 09:00 to Wednesday, 4 February 2015 at 18:00 (Europe/Zurich)  
CERN (40-S2-001 - Salle Bohr)

**Description** The purpose of the workshop is to assess the present limits of detectors technologies and identify the most relevant R&D trends that may lead to overcoming these limits and fulfil the requirements for FCC-hh detectors. The workshop will also be an occasion to establish working groups on all sub detector (ID tracking, Calorimetry, Muon spectrometers and Magnet systems). Each working group should address the potential and necessary further R&D, including need for high-energy test beams for MC validation, and eventually arrive to new Detector R&D proposals for consideration by the appropriate committees. A further aim of the workshop is to start the preparation of the Detector session for the Washington FCC Week.

A mailing list for people interested in detector design for FCC-hh has been established and interested people may self add to it: [fcc-experiments-hadron-detector@cern.ch](mailto:fcc-experiments-hadron-detector@cern.ch)

**Video Conference Rooms** [Workshop\\_on\\_requirements\\_for\\_future\\_detector\\_technologies\\_in\\_](#) [Join](#)

**Tuesday, 3 February 2015** [Go to day](#)

09:00 - 09:50 **Introduction**  
*General detector concepts  
Radiation environment  
Detector Simulation  
Detector machine issues.*  
Location: 4-S-030

09:00 **Workshop aim and structure 10'**  
Speaker: Ludovico Pontecorvo (Universita e INFN, Roma I (IT))  
Material: [Slides](#)

09:10 **General detector and machine issues 20'**  
Speaker: Werner Riegler (CERN)  
Material: [Slides](#)

09:30 **Initial radiation calculation 20'**  
Speaker: Charlie Young (SLAC National Accelerator Laboratory (US))  
Material: [Slides](#)

09:50 - 12:30 **Magnets**  
Convener: Herman Ten Kate  
Location: 4-S-030

09:50 **Introduction to magnet requirements and options 30'**  
Speaker: Herman Ten Kate (CERN)  
Material: [Slides](#)

10:20 **Twin Solenoid conceptual design, cold mass, cryostat and support system 45'**  
Speaker: Matthias Mentink (CERN)  
Material: [Slides](#)

11:05 **Refreshment break 30'**

11:35 **Toroid design 15'**  
Speaker: Matthias Mentink (CERN)  
Material: [Slides](#)

11:50 **Magnet Assembly Scenarios 20'**  
Speaker: Helder Filipe Pais Da Silva (CERN)  
Material: [Slides](#)

12:10 **Next 3 years program, R&D issues, magnet working group, collaborators 20'**  
Speaker: Herman Ten Kate (CERN)  
Material: [Slides](#)

12:30 - 13:55 **Lunch Break**

15:30 - 18:30 **Calorimetry**

CERN, February 3-4, 2015

Workshop on requirements for future detector technologies in view of FCC-hh (03-4 ... Page 3 sur 3

Material: [Slides](#)

11:30 **Cooling 20'**  
Speaker: Gregory Hallewell (Centre National de la Recherche Scientifique (FR))  
Material: [Slides](#)

11:50 **Advanced CMOS technologies and interconnects 30'**  
Speaker: Alessandro Marchiori (CERN)  
Material: [Slides](#)

12:20 **Summary 20'**  
Speaker: Saverio D'Auria (University of Glasgow (GB))  
Material: [Slides](#)

14:00 - 18:00 **Muon systems**  
Convener: M. Abbrescia, S. Vlachos

14:00 **Introduction: limits of the present detectors with a view to FCC-hh 20'**  
Speaker: Marcello Abbrescia (Universita e INFN (IT))  
Material: [Slides](#)

14:20 **Detectors for high time resolution at FCC-hh: Resistive Plate Chambers 30'**  
Speaker: Roberto Cardarelli (Universita e INFN Roma Tor Vergata (IT))  
Material: [Slides](#)

14:50 **Detectors for high space resolution at FCC-hh in the low occupancy region: Wire Chambers 30'**  
Speaker: Oliver Kortner (Max-Planck-Institut fuer Physik (Werner-Heisenberg-Institut) (D))  
Material: [Slides](#)

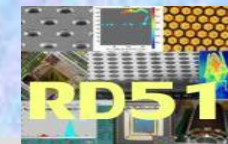
15:20 **Detectors for high space resolution in the high occupancy regions: Micro Pattern Gas Detectors 30'**  
Speaker: Maksym Titov (CEA/IRFU, Centre d'etude de Saclay Gif-sur-Yvette (FR))  
Material: [Slides](#)

15:50 **Systems for triggering/tagging/tracking at FCC-hh and related issues 30'**  
Speaker: Paolo Lengo (CERN)  
Material: [Slides](#)

16:20 **Conclusions: R&D strategy for the next years 20'**  
Speaker: Sotiris Vlachos (National Technical Univ. of Athens (GR))  
Material: [Slides](#)

Talk of S. Vlachos in the RD51 Plenary Session today →  
“Detector R&D for the FCC: Requirements and Challenges”

# 4<sup>th</sup> MPGD Conference in 2015 @ TRIESTE, ITALY



❖ DATES: 12 (Monday) – 17 (Saturday) Oct. 2015, arrival on 12 Oct. (Monday)

<https://agenda.infn.it/conferenceDisplay.py?ovw=True&confId=8839>

including

- 3 fully days: conference; 1.5 days: RD51 meeting; 0.5 days: excursion

	Monday 12 Oct. 2015	Tuesday 13 Oct. 2015	Wednesday 14 Oct. 2015	Thursday 15 Oct. 2015	Friday 16 Oct. 2015	Saturday 17 Oct. 2015
<i>morning</i>		MPGD2015 9.00 - 13.00	MPGD2015 9.00 - 13.00	MPGD2015 9.00 - 13.00	RD51 meeting 9.00-13.00	RD51 meeting 9.00-13.00
<i>lunch time</i>	Registration & Welcome lunch at conference site 12:30-14:30	Lunch at conference site 13:00-14:00	Lunch at conference site 13:00-14:00	Lunch at conference site 13:00-14:00	Lunch at conference site 13:00-14:00	
<i>afternoon</i>	MPGD2015 14.30-18.30	MPGD2015 14.00-18.00	Excursion 14.00-20.00	MPGD2015 14.00-18.00	RD51 meeting 14.00-18.00	
<i>evening</i>			20:00 Banquet			

## IMPORTANT DATES AND DEADLINES:

S. Dalla Torre

- ❖ April 24 – Registration opening / hotel reservation
- ❖ June 14 – Deadline for abstract submission
- ❖ July 20 - Feedback about submitted abstracts
- ❖ July 31 – Early registration deadline / hotel booking at preferential rates



# RD51 Collaboration Notes

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

## RD51 INTERNAL NOTES

### 2011

**RD51-Note-2011-017** - "Transport properties of operational gas mixtures used at LHC" (by Y. Assran, A. Sharma)

**RD51-Note-2011-016** - "THGEM-based detectors for s laboratory and beam evaluation" (by L. Arazi, H. Natal da R. Azevedo, A. Rubin, M. Cortesi, D. S. Covita, C. A. B. Oli Park, J. Yu, R. Chechik, J. M. F. dos Santos, M. Breidenbac A. Veloso, A. Breskin)

**RD51-Note-2011-015** - "Detection and removal of short M. Kalliokoski, T. Hildén, R. Lauhakangas, P. Karppinen, T Garcia, J. Heino and E. Tuominen)

**RD51-Note-2011-014** - "Optical Scanning System for Qu (by M. Kalliokoski, T. Hilden, F. Garcia, J. Heino, R. Lauhaka Turpeinen)

**RD51-Note-2011-013** - "Test beam results of the GE1/1 upgrade of the CMS high-eta muon system" (by D. Abbaneo Armagnaud, P. Aspell, Y. Ban, S. Bally, L. Benussi, U. Berza Bunkowski, J. Cai, J. P. Chatelain, J. Christiansen, S. Colafr Garcia, E. David, G. de Robertis, R. De Oliveira, S. Duarte Pinto, S. Ferry, F. Formenti, L. Franconi, K. Gnanvo, A. Gutierrez, M. Hohlmann, P. E. Karchin, F. Loddo, G. Magazzu, M. Maggi, A. Marchioro, A. Marinov, K. Mehta, J. Merlin, A. Mohapatra, T. Moulik, M. V. Nemallapudi, S. Nuzzo, E. Oliveri, D. Piccolo, H. Postema, G. Raffone, A. Rodrigues, L. Ropelewski, G. Saviano, A. Sharma, M. J. Staib, H. Teng, M. Tytgat, S. A. Tupputi, N. Turini, N. Smilkjovic, M. Villa, N. Zaganidis, M. Zientek)

**RD51-Note-2011-012** - "Construction and Performance of Large-Area Triple-GEM Prototypes for Future Upgrades of the CMS Forward Muon System" (by M. Tytgat, A. Marinov, N. Zaganidis, Y. Ban, J. Cai, H. Teng, A. Mohapatra, T. Moulik, M. Abbrescia, A. Colaleo, G. de Robertis, F. Loddo, M. Maggi, S. Nuzzo, S. A. Tupputi, L. Benussi, S. Bianco, S. Colafranceschi, D. Piccolo, G. Raffone, G. Saviano, G. Magazzu, E. Olivieri, N. Turini, T. Fruboies, D. Abbaneo, C. Armagnaud, P. Aspell, S. Bally, U. Berzano, J. Bos, K. Bunkowski, J. P. Chatelain, J. Christiansen, A. Conde Garcia, E. David, R. De Oliveira, S. Duarte Pinto, S. Ferry, F. Formenti, L. Franconi, A. Marchioro, K. Mehta, J. Merlin, M. V. Nemallapudi, H. Postema, A. Rodrigues, L. Ropelewski, A. Sharma, N. Smilkjovic, M. Villa, M. Zientek, A. Gutierrez, P. E. Karchin, K. Gnanvo, M. Hohlmann, M. J. Staib)

**RD51-Note-2011-007** - "First observation of Cherenkov rings with a large area CsI-TGEM-based RICH prototype" (by V. Peskov, G. Bencze, A. Di Mauro, P. Martinengo, D. Mayani, L. Molnar, E. Nappi, G. Paic, N. Smirnov, H. Anand, I. Shukla)

**RD51-Note-2011-006** - "On the low-temperature performances of THGEM and THGEM/G-APD multipliers in gaseous and twophase Xe" (by A. Bondar, A. Buzulutskov, A. Grebenuk, E. Shemyakina, A. Sokolov, D. Akimov, I. Alexandrov and A. Breskin )

Modelling of avalanches and streamers by finite elements with de", Notes for the RD51 Simulation School, CERN, Jan. 19-21

Thermal Stretching of Large-Area GEM Foils Using an Infrared el Staib, Bryant Benson, Kondo Gnanvo, Marcus Hohlmann,

On the operation of a Micropattern Gaseous UV Photomultiplier val, A. Breskin, R. Budnik, W.T. Chen, H. Carduner, M. Cortesi, ird, J. Lamblin, P. Le Ray, E. Morteau, T. Oger, J.S. Stutzmann

Infrared scintillation yield in gaseous and liquid argon for rare-Buzulutskov, A. Bondar, A. Grebenuk)

"Further Developments and Tests of Microstrip Gas Counters (by R. Oliveira, V. Peskov, Pietropaolo, P.Picchi).

### 2010

**RD51-Note-2010-009** - "Gas Flow Simulations for gaseous detectors" (by D. Abbaneo, S. Bally, H. Postema, A. Conde Garcia, J. P. Chatelain, G. Faber, L. Ropelewski, S. Duarte Pinto, G. Croci, M. Alfonsi, M. Van Stenis, A. Sharma, L. Benussi, S. Bianco, S. Colafranceschi, F. Fabbri, L. Passamonti, D. Piccolo, D. Pierluigi, A. Russo, G. Saviano, A. Marinov, N. Zaganidis, N. Turini, E. Oliveri, G. Magazzu, Y. Ban, H. Teng, J. Cai)

**RD51-Note-2010-008** - "Construction of the first full-size GEM-based prototype for the CMS high-eta muon system" (by D. Abbaneo, S. Bally, H. Postema, A. Conde Garcia, J. P. Chatelain, G. Faber, L. Ropelewski, S. Duarte Pinto, G. Croci, M. Alfonsi, M. Van Stenis, A. Sharma, L. Benussi, S. Bianco, S. Colafranceschi, F. Fabbri, L. Passamonti, D. Piccolo, D. Pierluigi, G. Raffone, A. Russo, G. Saviano, A. Marinov, M. Tytgat, N. Zaganidis, M. Hohlmann, K. Gnanvo, M.G. Bagliesi, R. Cecchi, N. Turini, E. Oliveri, G. Magazz`u, Y. Ban, H. Teng, J. Cai)

RD51 Notes: 6 in 2014  
8 in 2013  
12 in 2012  
17 in 2011;  
9 in 2010;  
7 in 2009

Please submit results of your work, in parallel with journal publication, as RD51 Note:

→ Efficient way to disseminate your results to the MPGD/RD51 community  
(rd51-all email goes to ~ 500 people)

# EU-AIDA2020 Proposal



The MPGD Items are evident in the list:

- Proposal submitted on 2/9/2014
- It includes the WP:  
JRA1 - Innovative Gas Detectors (MPGD & RPC)
  - coordinators:
    - S. Dalla Torre
    - I. Laktineh
- Several tasks of general interest for RD51
- ❖ Institutions involved in MPGD tasks:  
CEA, CERN, INFN, MPG, Ulund, Wigner

## Objectives

### Task 13.1 Scientific coordination

- Coordinate and schedule the execution of the WP tasks
- Monitor the work progress (milestone and deliverable reports), follow-up on budget and the use of resources
- Organise WP meetings

### Task 13.2 Advanced detector developments

- Establishing new resistive materials for high rate RPCs
- Development of fast-timing large RPCs
- High-rate and fine space resolution RPCs operated in  $^3$ He-gases
- Development of the Resistive-WELL GEM detector (RWGEM)
- Development of high-gain MPGDs based on  $^3$ He-gases THGEMs and hybrid MPGDs

### Task 13.3 Tools to facilitate the detector development

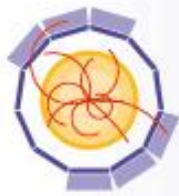
- Interfacing FE-chips specific to  $^3$ He-gases detectors to the Scalable Readout System (SRS)
- Development of cheap, standardised dedicated laboratory instruments
- PCB development using  $^3$ He-gases technology and 3D-mounting of chips for MPGD readout

### Task 13.4 Preparation for large series production

- Large-size RPC production preserving mechanical precision
- Establishing production lines and tools for large series resistive MICROMEAS anodes
- Control of micromesh mechanical tensioning by optical techniques
- Quality control tool for detailed gain maps (hole by hole)
- Design of a quality control system to ensure the electrical integrity of electrode patterns by pulse reflection method
- Production protocols of optimised RPC components for easy technology dissemination
- Standard production protocols of optimised MPGD components to facilitate technology dissemination

S. Dalla Torre

Thanks to coordination of Silvia Dalla Torre (INFN Trieste)



# AIDA2

Advanced European Infrastructures  
for Detectors at Accelerators

## A<sub>dvanced</sub>I<sub>n</sub>frastructure D<sub>etectors</sub> A<sub>ccelerators</sub> 2020 [5 Years Projects]

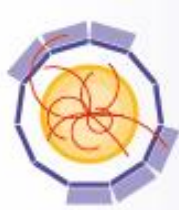
Dear Colleague,

We are now confident that the project will officially start on May 1st, and at the latest June 1st.

The AIDA-2020 kick-off meeting is therefore scheduled from June 3rd to 5th at CERN.

Preliminary agenda, with dedicated WP meeting session, and registration will be available end of March with an indico page.

Best Regards, Laurent



# AIDA2

Advanced European Infrastructures  
for Detectors at Accelerators

## WP 12 : Innovative Gas Detectors (RPC, MPGD)

**12.2 Advanced detector developments**

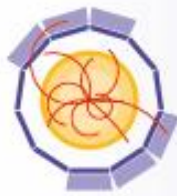
**12.3 Common tools for detector development**

**12.4 Large series production**

S. Dalla Torre

**Total WP funding (MPGD + RPC): 806 k euro**

**➤ MPGD funding: 547 k euro.**



### MPGD Tasks

S. Dalla Torre

#### Task 12.2 Advanced detector developments:

- Resistive-WELL GEM detector (R-WGEM) [INFN-LNF, 2 institutes(\*)]
- high-gain MPGDs based on THGEMs and hybrid MPGDs [INFN-TS, 3 inst.(\*)]

#### Task 12.3 Tools to facilitate the detector development:

- Interfacing gas detectors FE-chips to SRS [CERN, 3 inst.(\*)]
- Dedicated laboratory instruments [CERN, 4 inst.(\*)]
- Readout with HDI-technology and 3D- mounting of chips [Ulund(\*)]

#### Task 12.4 Preparation for large series production:

- Procedures and tools for large series resistive micromegas anodes [CEA, 2 inst.(\*)]
- Foil/micromesh mechanical tensioning (optical techniques) [INFN-LNF, 3 inst.(\*)]
- Quality control tool for detailed gain maps (hole by hole) [Wigner-FK, 2 inst.(\*)]
- Electrical integrity quality control of electrode patterns [INFN-BA, 2 inst.(\*)]
- Production protocols to facilitate technology dissemination [CEA, 4 inst(\*)]

(\*) Only leading institutes and total number of involved institutes are shown for sake of simplicity

# RD51 Gaseous detectors Network Training for academic and industrial applications (GASNET)

## Horizon 2020: GASNET / GASNET 2 Proposals

### Abstract:

Micro-Pattern Gaseous Detectors (MPGD) are the successors of Multiwire Proportional Chambers, achieving excellent spatial resolution, very high rate capability, increased radiation hardness, high time resolutions and good counting rate. Thanks to remarkable progress in recent years, MPGDs are nowadays well established technologies in use or envisaged in a very wide range of applications within High Energy Physics but also in astroparticle, neutrino and low energy nuclear physics. These technologies are approaching a technology readiness level adequate to transfer the production of crucial detector components to industry in order to be able to supply a very large quantity of detectors in the coming years. Moreover applications outside the academic communities start emerging like screening for homeland security, muon radiography for geological studies, medical imaging, environmental monitoring of the soil radioactivity.... In order to improve the performance and maturity of MPGDs serving this rich panorama, the ultimate performance of the MPGDs has still to be obtained, the technological procedures have to be upgraded and the engineering aspects require further skill and dedication. The aim of this network is to provide an excellent environment to 15 young researchers to acquire a solid background and expertise in state-of-the-art of MPGD detectors from design to construction, industrial technological transfer and detector characterisation. For this purpose, the network consists of 9 academic institutions and 17 associate partners (research institutes, industrial companies and universities) of excellence, providing the students a multidisciplinary stimulating educational environment. Indeed, the PhD students will not only learn the principles and details of the technology but they will also contribute to the industrial development and to the applications in the civil sector.

### Evaluation Summary Report

#### Evaluation Result

**Total score: 84.80% (Threshold: 70/100.00)**

→ The overall score leads to a funding which does not allow your proposal to be funded

**Strong proposal, but some areas for improvements identified by the referees:**

- The role of non-academic partners in the training programme is modest and apparently still under investigation
- The participation of the non-academic partners in the management is not entirely convincing in the description, reflecting the fact that their roles are not central in this research and training

**→ PROPOSAL RE-SUBMITTED IN JANUARY 2015**

Thanks to coordination of Esther Ferrer Ribas (CEA Saclay)



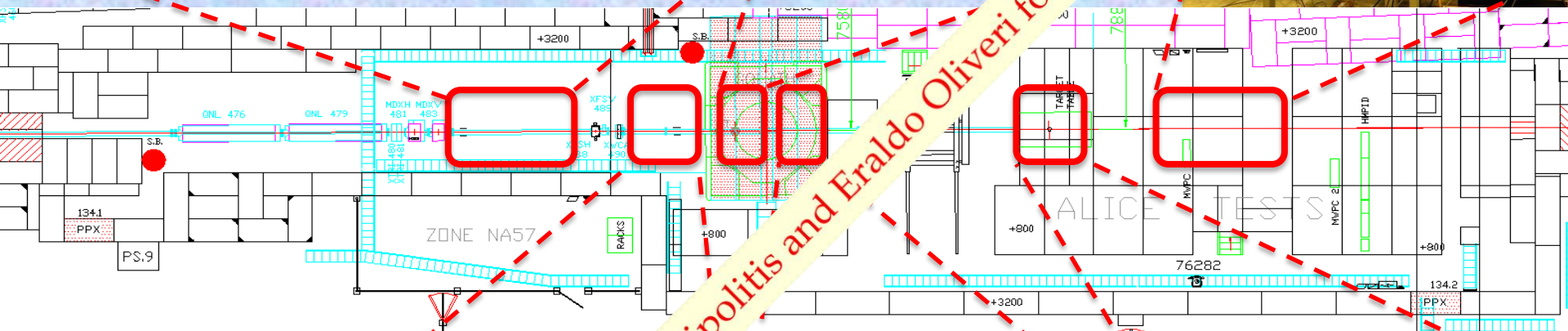
CMS GEMs



ATLAS NSW umegas



ALICE GEM



Many thanks to Yorgos Tsipolitis and Eraldo Oliveri for the excellent organization

2014

(19-5 days)

CMS-GEM

DHCAL-THGEM  
ATLAS NSW MM

BES III-GEM

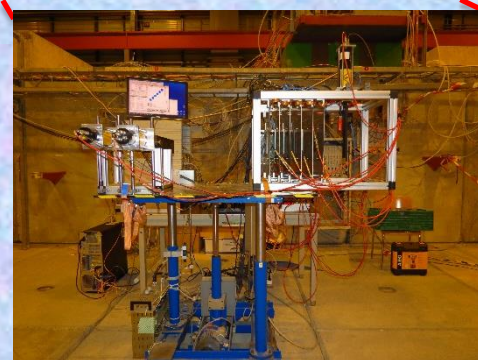
CMS umegas CALO

ALICE-GEM

DHCAL-THGEM



BES III



CMS umegas CALO

# WG7: 2015 RD51 Test – Beam Schedule

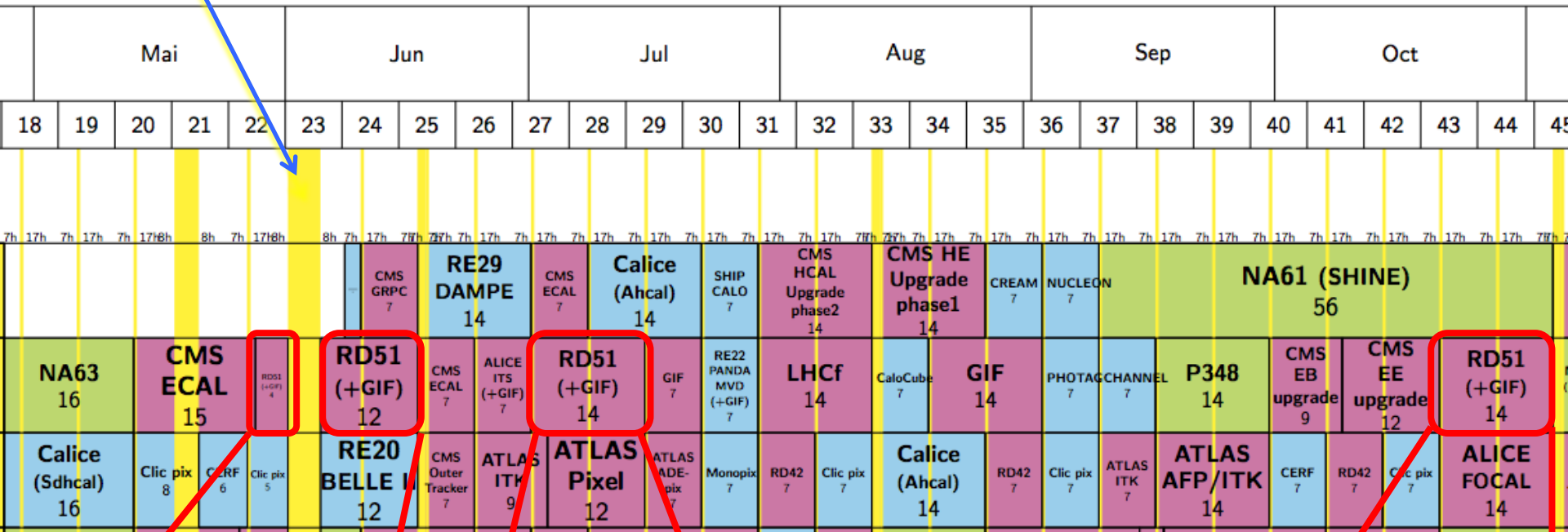


scrubbing

## SPS user schedule for 2015

E. Oliveri,  
Y. Tsipolitis

Version: 1.03    LHC Exp.    PS/SPS Exp.    INT Exp.    Other Exp.



Period 1  
28/5 – 1/6 &  
5/6 – 17/6

Period 2  
1/7 – 15/7

Period 3  
21/10 – 4/11



# Today: **15<sup>th</sup> RD51 Collaboration Meeting (Mar. 18-20, 2015)**

<https://indico.cern.ch/event/365380/other-view?view=standard>

## ❖ **Wednesday, March 18**

**09:00 – 10:00 RD51 Plenary**

**10:00 - 12:30 WG6 Production**

**14:00 – 18:30 WG1 MPGD Technologies and New Structures  
(special mini-workshop MPGDs for calorimetry)**

## ❖ **Thursday, March 19**

**09:00 – 12:30 WG5 Electronics**

**14:00 - 18:00 WG4 Software**

## ❖ **Friday, March 20**

**09:00 – 12:00 WG7 Test Beams**

**14:00 – 18:00 WG2 Physics Issues**

A few 2015 milestones:

❖ RD51 Article for CERN Courier

❖ RD51 Mini-Week and

3<sup>rd</sup> Academia- Industry Matching Event “Detecting Photons with MPGDs” (Jun. 8-12)