

# 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 27 - 31, 2014 Sponsor  
Kolkata Board of Research in Nuclear Science  
India 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  
Satyajit Saha SINP  
Vikas Singh VECC

### Contact

E-mail : rd5india@vecc.gov.in  
Postal :  
Anand Kumar Dubey, Convener  
Variable Energy Cyclotron Centre (VECC)  
Department of Atomic Energy  
IAF, Bidhan Nagar, Kolkata - 700064, India  
Phone : +91 33 2338 2478 / 2490  
Fax : +91 33 2334 6871

### 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 Benicveni INFN-IFN, Italy  
Rakesh K. Bhandari IUAC, India  
Sudeb Bhattacharya SINP, India  
Bikas K. Chakraborty SINP, India  
Paul Colas CEA/IRFU Saclay, France  
Vivek M. Datar NPD, BARC, India  
Klaus Desch Bonn University, Germany  
Ioannis Giomataris CEA Saclay, France  
Harry van der Graaf NIKHEF, The Netherlands  
Naba K. Mondal TIFR, India  
Sibaji Raha Bose Institute, India  
Leszek Ropelewski CERN, Switzerland  
Fabio Sauli CERN, Switzerland  
Christian J. Schmidt GSI Darmstadt, Germany  
Anur Sinha BARC, India  
Dinesh K. Srivastava VECC, India  
Hans Taureg CERN, Switzerland  
Maxim Titov CEA Saclay, France  
Silvia Dalla Torre Trieste Univ. & INFN, Italy  
Yogendra P. Vivigi VECC, India  
Andy White Univ. of Texas, Arlington, USA

For participation in IWAD please send one page abstract to

rd5india@vecc.gov.in  
on or before  
August 15, 2014.



14<sup>th</sup> RD51 Collaboration Meeting, Kolkata, India, October 29-31, 2014

# 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 ?



Dance Academy - Revealing “Cultural Heritage of India”

**Today:** **14<sup>th</sup> RD51 Collaboration Meeting (Oct. 29-31, 2014)**

<https://indico.cern.ch/event/348222/other-view?view=standard>

❖ **Wednesday, October 29**

**09:30 – 10:10 RD51 Collaboration News**

**10:10 – 13:30 WG6 Production**

**13:30 – 14:30 Lunch**

**14:30 - 18:30 WG4 Software**

**18:30 - 20:00 RD51 Collaboration Board Meeting**

❖ **Thursday, October 30**

**09:30 – 10:00 WG5 Electronics**

**10:00 - 12:00 WG1 MPGD Technologies and New Structures**

**12:00 - 13:30 Lunch**

**13:30 - 19:00 Excursion**

❖ **Friday, October 31**

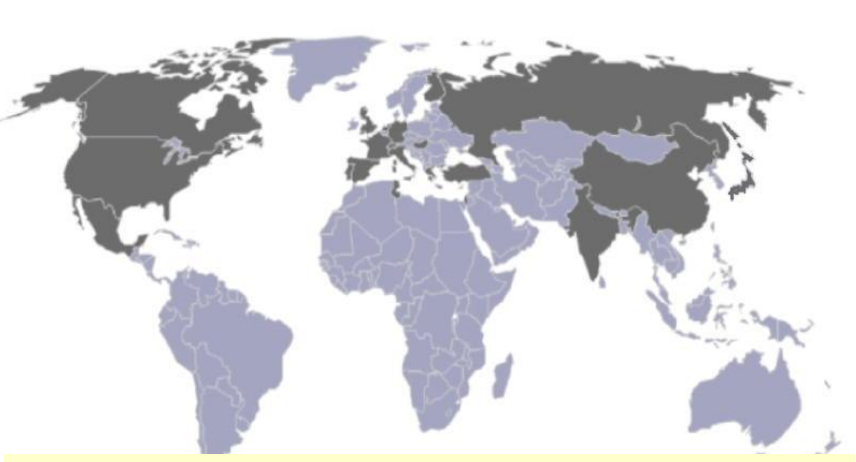
**09:30 - 13:30 WG2 Physics Issues**

**14:30 – 16:30 WG7 Test Beams**

# RD51 – Development of Micro-Pattern Gaseous Detector Technologies



The **main objective** is to advance **MPGD** technological development and associated electronic-readout systems, for applications in basic and applied physics.



<http://rd51-public.web.cern.ch/rd51-public>

A **fundamental boost** is expected to be achieved by the **isolate MPGD development** from the **wide net**.

1998

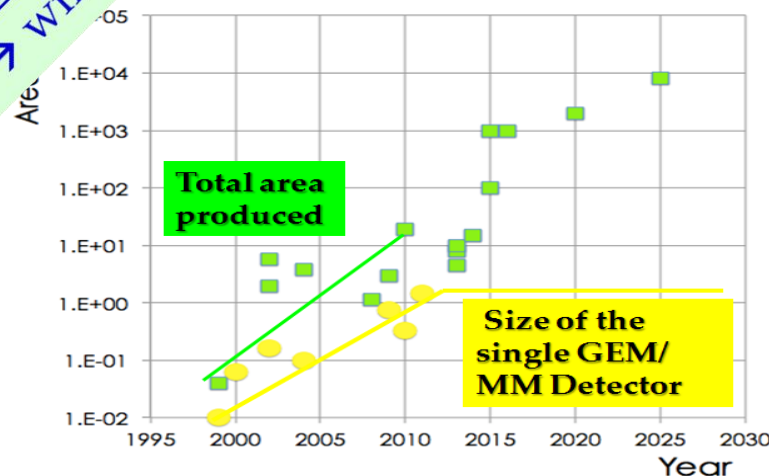


Enhancing geographical diversity and expertise of the RD51 community:  
 4 institutes from Brazil, India, Japan, Republic of Korea expressed interest to join RD51 → will be discussed at the RD51 CB Meeting tonight

**World-wide Collaboration for the MPGD Developments** → RD51 (~ 90 institute, > 500 people)

- ❖ Large Scale R&D program to **advance MPGD Technology**
- ❖ Access to **the MPGD “Knowledge”**
- ❖ Foster **Industrial Production**

Advances in photolithography → Area MPGDs (~ m<sup>2</sup> unit size)



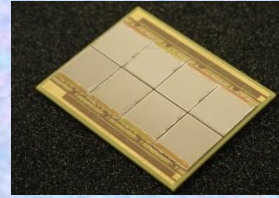
# RD51 Collaboration Organization



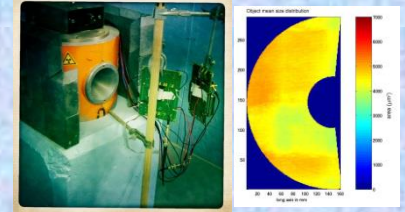
Large Area Detectors  
Assembly Optimization



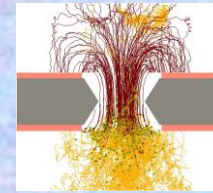
**WG1:**



RD51 Common Projects  
Generic R&D, QA  
Long Term Stability



**WG2:**



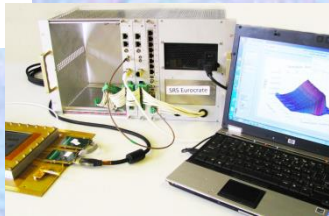
Software Tools  
and  
Simulations

**WG4:**

**RD51**

**WG5:**

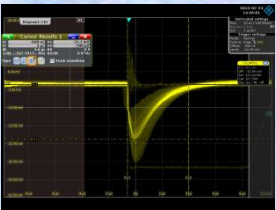
MPGD  
Electronics



**WG3/NEW WG:**

- Conferences / Schools
- Academia-Industry Matching Events

**WG7:**



RD51 Common  
Test Beam and Lab  
Facilities



**WG6:**



CERN MPGD  
Workshop,  
Quality Control  
and  
Industrialization

# RD51 Working Group Activities and Future Projects



- **WG1:** Continuation of the R&D support for the experiments and LHC upgrades
- **WG2:** Generic R&D (long-term stability, quality control); RD51 Common Projects  
Development of new structures and consolidation of the existing structures
- **WG3 (NEW): Applications** - organization of series of specialized workshops disseminating MPGD applications beyond fundamental physics – RD51, potential users and industry (e.g. dosimetry, neutron detection, medical physics, ...)
- **WG4:** Development and Maintenance of Software & Simulation Tools; basic studies & software support for the RD51 community
- **WG5:** Development and Maintenance of the SRS Electronics; An extended support for the SRS including new developments and implementations of additional features
- **WG6:** MPGD Production and QA Control - GEM, MicroMegas, Thick GEM; completion of the industrialization of main technologies
- **WG7:** Maintenance and extension of the RD51 Lab and Test-Beam Infrastructure
- **WG (NEW): MPGD Education and Training** : organization of schools for students and newcomers & academic training
- Participation in the funding requests / funding contributions: Marie-Curie/GASNET, AIDA2

# 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. Oliveri, 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: 4 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)

# 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); Neutron Detection with MPGD: follow-up event

## RD51 Communications:

➤ RD51 Collaboration Meetings Agenda:

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

➤ Collaboration Board Minutes:

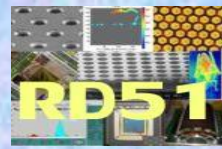
<https://espace.cern.ch/test-RD51/CB%20meeting%20minutes/Forms/AllItems.aspx>

➤ Management Board Minutes:

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



# RD51 LHCC Review (2014)



## LHCC Minutes (June 4-5, 2014):

Following RD51  
presentation to the  
LHCC

→ Recognition of  
the RD51 efforts

### R&D Projects

RD39: The LHCC recommended that the RD39 project be continued for one year with emphasis to be placed on the development of the Beam Loss Monitor with the LHC machine groups.

RD42: The LHCC recommended that the RD42 project be continued for one year and encouraged the Collaboration to proceed with the publication on the diamond technology.

RD50: The LHCC recommended that the RD50 project be continued for one year and requested that studies of HVCMOS technologies be included in their programme.

RD51: The LHCC recommended that the RD51 project be continued for four years beyond 2014.

RD52: The LHCC recommended that the RD52 project be continued for one year and requested that the Collaboration submit their detailed plan of work for the coming year.

RD53: The LHCC recommended that the RD53 project be continued for two years beyond 2014 and requested that studies of HVCMOS technologies be included in their programme as a potential alternative for the LHC upgrades.

### LHCC Executive Summary:

### Referee Report on RD51:

- The Committee took note of the numerous RD51 achievements. Recent support for LHC-related activities includes development of Micromegas for the ATLAS muon system upgrade, GEMs for the CMS muon system upgrade as well as GEMs for the ALICE TPC upgrade. The developments of the Scalable Read-out System (SRS) electronics over last year was considerable with ~30 experimental groups procuring elements of this system and ~20 more orders in the pipeline with 27 students attending SRS electronics school this year.
- The referee also reported on RD51's plans for beyond 2014. The plans include continuation of R&D support for the LHC experiments and their upgrades; generic R&D; development and maintenance of software and simulation tools; development and maintenance of software of SRS electronics; industrialization of the MPGD technology; maintenance and extension of the RD51 laboratory and test beam infrastructure
- RD51 is a successful R&D Collaboration with well-defined and important future plans.

# 14-15 October 2013: 1<sup>st</sup> RD51 Academia – Industry Matching Event “Special Workshop on Neutron Detection with MPGDs”



**Research + industry + potential users focused on dedicated applications**  
**91 participants:** <https://indico.cern.ch/conferenceDisplay.py?confId=265187>

# Summary of the 1<sup>st</sup> Academia – Industry Matching Event “Neutron Detection with MPGDs”

... IS NOW PUBLISHED !!!

Many thanks to the efforts of organizers:  
Bruno Guérard  
Fabrizio Murtas  
Richard Hall-Wilton

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

Discussions are ongoing about organization:

- ❖ Follow-up Event on  
“Neutron Detection with MPGD”
- ❖ 2<sup>nd</sup> Academia-Industry Matching Event  
“Photon Detection with MPGD”

= Georges Charpak = 90th anniversary  
(Ukraine, Lviv, Monday, July 21 – 14.00-19.00)

Bringing Nations Together Through Science: “CERN 60 Years of Science for Peace”



*Final Program*

**Location** : Lviv Polytechnic University (auditorium); *Stepan Bandera str. 12 – Lviv, Ukraine*

14.00	Opening words	<i>Maxim Titov</i> - Co-Spokesperson of the RD51/CERN Collaboration, CEA-Saclay, France
14:10	Welcome	<i>Borys Grynyov</i> - First Deputy Chairman, State Agency on Science, Innovation and Informatization of Ukraine
14.15	Welcome	<i>Yuriy Bobalo</i> - Rector of National University Lviv Polytechnic
14.20	Welcome	<i>Zimoviy Nazarchuk</i> - Head of Western Scientific Centre of NASU and of Ministry of Education and Science of Ukraine
14.25	Welcome	<i>Yuriy Pidlisnyy</i> - Deputy Head of Lviv Regional State Administration on humanitarian issues
14.30	Georges Charpak – a symbol for scientific cooperation	<i>Gilles Mametz</i> – French Embassy in Ukraine
14:50	CERN: Bringing nations together through science	<i>Agnieszka Zalewska</i> – President of the CERN Council, Poland
15:20	France – Ukraine cooperation: TESHEP and Other Joint Projects	<i>Achille Stocchi</i> – Head of Linear Accelerator Laboratory, IN2P3/CNRS, France
15:50	CEA Saclay Irftu: Technology Domains, Georges Charpak and future cooperation with Ukraine	<i>Nicolas Alamanos</i> – Deputy Head of IRFU, CEA-Saclay, France
16:10	Coffee Break	
16:30	Polish strategy for science in Ukraine and European perspectives	<i>Henry Sobczuk</i> – Polish Academy of Sciences, Poland
16:50	Greece strategy for science; Georges Charpak and four seas conferences	<i>Evangelos Gazis</i> – National Technical University, Athens, Greece
17:10	Video content – documentary film about Georges Charpak “The price of a nobel”	
17:40	Cooperation between CERN and Young Academy of Sciences of Ukraine. Presentation of the Ukrainian version of Georges Charpak’s autobiography “Memoirs of an uprooted, physicist, citizen of the world”	<i>Ivan Riabchyj</i> - Young Academy of Sciences of Ukraine
18:00	Physicist who transformed the measurement of high-energy particles; from multi-wire proportional chamber to the novel gaseous detectors	<i>Maxim Titov</i> – Co-Spokesperson of the RD51/CERN Collaboration, CEA Saclay, France
18:20	Future projects in High Energy Physics: knowledge frontier / innovation / education / outreach	<i>Achille Stocchi</i> – Head of Linear Accelerator Laboratory, IN2P3/CNRS, France
19:00	End of the event	

# 90<sup>th</sup> Anniversary of Georges Charpak

Ukraine, Lviv  
July 21, 2014

Bringing Nations  
Together  
Through Science

“CERN 60 Years of  
Science for Peace”

= Georges Charpak = 90th anniversary  
(Ukraine, Lviv, Monday, July 21 – 14.00-19.00)

Bringing Nations Together Through Science: “CERN 60 Years of Science for Peace”



*Final Program*

**Location :** Lviv Polytechnic University (auditorium); *Stepan Bandera str. 12 – Lviv, Ukraine*

14.00	Opening words	<i>Maxim Titov</i> - Co-Spokesperson of the RD51/CERN Collaboration, CEA-Saclay, France
14:10	Welcome	<i>Borys Grynyov</i> - First Deputy Chairman, State Agency on Science, Innovation and Informatization of Ukraine
14.15	Welcome	<i>Yuriy Bobalo</i> - Rector of National University Lviv Polytechnic
14.20	Welcome	<i>Zinovy Nazarchuk</i> - Head of Western Scientific Centre of NASU and of Ministry of Education and Science of Ukraine
14.25	Welcome	<i>Yuriy Pidlisnyy</i> - Deputy Head of Lviv Regional State Administration on humanitarian issues
14.30	Georges Charpak – a symbol for scientific cooperation	<i>Gilles Mametz</i> – French Embassy in Ukraine
14:50	CERN: Bringing nations together through science	<i>Agnieszka Zalewska</i> – President of the CERN Council, Poland
15:20	France – Ukraine cooperation: TESHEP and Other Joint Projects	<i>Achille Stocchi</i> – Head of Linear Accelerator Laboratory, IN2P3/CNRS, France
15:50	CEA Saclay Irfu: Technology Domains, Georges Charpak and future cooperation with Ukraine	<i>Nicolas Alamanos</i> – Deputy Head of IRFU, CEA-Saclay, France
16:10	Coffee Break	
16:30	Polish strategy for science in Ukraine and European perspectives	<i>Henry Sobczuk</i> – Polish Academy of Sciences, Poland
16:50	Greece strategy for science; Georges Charpak and four seas conferences	<i>Evangelos Gazis</i> – National Technical University, Athens, Greece
17:10	Video content – documentary film about Georges Charpak “The price of a nobel”	
17:40	Cooperation between CERN and Young Academy of Sciences of Ukraine. Presentation of the Ukrainian version of Georges Charpak’s autobiography “Memoirs of an uprooted, physicist, citizen of the world”	<i>Ivan Riabchyj</i> - Young Academy of Sciences of Ukraine
18:00	Physicist who transformed the measurement of high-energy particles; from multi-wire proportional chamber to the novel gaseous detectors	<i>Maxim Titov</i> – Co-Spokesperson of the RD51/CERN Collaboration, CEA Saclay, France
18:20	Future projects in High Energy Physics: knowledge frontier / innovation / education / outreach	<i>Achille Stocchi</i> – Head of Linear Accelerator Laboratory, IN2P3/CNRS, France
19:00	End of the event	

# A conference: 90<sup>th</sup> Anniversary of Georges Charpak

*was organized in the framework of the  
Trans-European School of High  
Energy Physics (TESHEP)  
by the*

- *French Embassy in Ukraine,*
- *EU – “Science and Technology Center in Ukraine (STCU)”*
- *LAL/IN2P3 – CNRS*
- *Irfu/CEA Saclay*
- *CERN*
- *RD51 Collaboration*
- *Ukrainian State Agency on Science, Innovation and Informatization*
- *Lviv Polytechnic University*

# Georges Charpak : 90th Anniversary – Bringing Nations together through Science

During a particularly fragile time for Ukraine, scientists from France, Ukraine, Poland and CERN met together in the National University “Lviv Polytechnic” in memory of Charpak and to continue his scientific and cultural traditions.

Slides/photos are available:

<https://indico.cern.ch/event/331478/timetable/#20140721>

<http://cern60.web.cern.ch/en/galleries>

ANNIVERSARY

## Georges Charpak: Bringing nations together through science

A mini-conference dedicated to the 90th anniversary of the birth of Georges Charpak took place on 21 July in Lviv, Ukraine, during the Trans-European School of High-Energy Physics (TESHEP), which was held on 17–24 July.

Charpak was born in 1924 in Dabrowica, Poland – now Dubrovytsia in Ukraine. He moved to France at the age of seven, and went on to join CERN in 1959. In 1968, he invented the multiwire proportional chamber, which revolutionized particle physics and brought him the 1992 Nobel Prize in Physics (*CERN Courier* December 2010 p33).

A passionate physicist, he was also involved in many social and humanitarian projects.

He was a source of inspiration to many scientists. In 1992 he founded the organization *Physique sans frontières*, and supported its effort to set up the Four Seas Conference series. Starting in Trieste in 1995, these took place later in Sarajevo (1998), Thessalonika (2002), Istanbul (2004) and Iasi (2007). Their focus on south-eastern Europe gave the region's young scientists the opportunity to learn about the most recent advances in science and technology. The conferences also served as a way to express the solidarity of the European scientific community with all those who, under difficult conditions, seek to keep alive diverse intellectual and cultural links, and to emphasize the unity of science.



*Organizers of the Charpak event and TESHEP. Left to right: S Barsuk (LAL), H Sobczuk (Polish Academy of Science), M Titov (IRFU), Z Nazarchuk (National Academy of Science of Ukraine), A Stocchi (LAL), M-H Schune (LAL), A Zalewska (president of CERN Council), N Alamanos (IRFU), G Mametz (French Embassy in Ukraine), B Grinyov (State Agency on Science, Innovation and Information of Ukraine), I Ryabchyy (Young Academy of Sciences of Ukraine). (Image credit: TESHEP.)*

This year, when Charpak would have been 90, CERN is celebrating 60 years of science for peace, following its foundation in 1954. During a particularly fragile time for Ukraine, scientists from France, Ukraine, Poland and CERN met together in the National University “Lviv Polytechnic” in memory of Charpak and to continue his scientific and cultural traditions. The “Charpak Event” was

was the leitmotiv of the opening talk by Gilles Mametz, the attaché for scientific and university co-operation of the French embassy in Ukraine. Then, in her talk on the theme “CERN: Science unites nations”, Agnieszka Zalewska, the president of CERN Council, emphasized the idea that Charpak always aimed for physics in the service of humankind – with scientists working together peacefully at the frontiers of research and disseminating

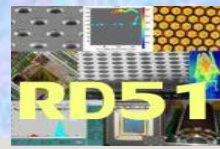
CERN Courier Article, November 2014 nership  
chille

aim of reinforcing east–west scientific and pedagogical links in Europe. Despite the current situation in Ukraine, the event attracted around 100 participants, and was attended not only by local authorities and well-known scientists, but also by students of Lviv University and members of the Lviv department of the Minor Academy of Sciences of Ukraine.

Welcoming talks were given by Borys Grinyov, of the State Agency on Science, Innovation and Information, as well as by representatives of the National Academy of Science of Ukraine, Lviv City Administration and Lviv Polytechnic University. “Charpak is the symbol of scientific co-operation”,

Stocchi, director of Laboratoire de l'accélérateur linéaire (LAL), Orsay, summarized the pedagogical and scientific relations between the two countries and ways to expand the collaboration in the context of experiments at CERN. Nicolas Alamanos, deputy-head of Institute of Research into the Fundamental Laws of the Universe (IRFU), Saclay, then spoke on technology domains of potential co-operation between France and Ukraine, and about the Micromegas detector concept developed in 1996 in a collaboration between Charpak and scientists from Saclay. Following a discussion of the French–Ukraine activities, Henry Sobczuk of the Polish Academy of Science emphasized a

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



❖ DATES: 12 (Monday) – 16 (Friday) Oct. 2015, arrival on 11 Oct. (Sunday)

including

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

According to the scheme →

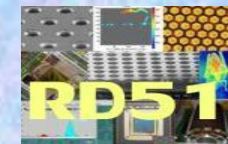
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	11 Oct. 2015	12 Oct. 2015	13 Oct. 2015	14 Oct. 2015	15 Oct. 2015	16 Oct. 2015
<i>morning</i>		MPGD2015	MPGD2015	MPGD2015	MPGD2015	RD51 meeting
<i>lunch time</i>		lunch at conference site	lunch at conference site	lunch at conference site	lunch at conference site	lunch at conference site
<i>afternoon</i>		MPGD2015	MPGD2015	excursion	RD51 meeting	RD51 meeting
<i>evening</i>	7 p.m. - registration and welcome party			8 p.m. banquet		

Ongoing activity

- Preparing the contract with the Congress Centre
- Pre-booking of the hotels
- Preparation of the web page

S. Dalla Torre

# 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 low-gases
- Development of the Resistive-WELL GEM detector (RWGEM)
- Development of high-gain MPGDs based on THGEMs and hybrid MPGDs

### Task 13.3 Tools to facilitate the detector development

- Interfacing FE-chips specific to readout detectors to the Scalable Readout System (SRS)
- Development of cheap, standardised dedicated laboratory instruments
- PCB development using FPC 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 MICROMEGAS 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)



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

Horizon 2020 / GASNET: 9 academic institutions and 17 associate partners

## 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 ensure 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 interact with the academic sector 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 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

→ GOAL IS TO RE-SUBMIT proposal early 2015

IDEAS OF HOW TO IMPROVE PARTNERSHIP WITH INDUSTRY IS OF A KEY IMPORTANCE

This RD51 funding is intended to support part of the project cost in the areas of common interest to the community described in the RD51 proposal:

- ❖ Generic R&D projects towards developments of novel techniques, improvements of existing structures, characterization methods and dedicated tools;
  - ❖ Developments and optimization of MPGDs for applications outside HEP with a possibility of technology transfer to industry.
- 
- The minimum number of participating institutes in the common project is 3;
  - The maximum contribution from the RD51 common fund per each institute is 5000 CHF;
  - The maximum contribution from the RD51 common fund per project is 30000 CHF per calendar year. This implies that a minimum number of 6 institutes is required to reach the maximum allowed contribution of 30000 CHF.
  - At least, 50% of the total cost for the RD51 common project must be provided by the participating institutes. Each participating institute should provide list of internal financial resources (grants, institute financing, ... etc. ) to complement RD51 Common fund contribution. The internal financial resources will stay within the participating institutes.
  - Financial contribution from the RD51 common fund can be used to purchase materials and consumables (ordered via CERN). Manpower cost could not be supported under this call.

**The MB selects new proposals:**

- Institutes can participate in a new project only if they finished already approved projects + note submitted
- Continued funding of a project will be reviewed and decided on a case by case basis.
- RD51 Common Fund could not be used for orders of existing MPGD detectors
- (e.g. standard GEM, MM, THGEM) and electronics (e.g. SRS, ASICs)

# Current RD51 Common Projects

A. White

1) Thin and high-pitch laser-etched mesh manufacturing and bulking (Saclay / CERN / Bari)  
Contact: [vincenzo.berardi@ba.infn.it](mailto:vincenzo.berardi@ba.infn.it); [paul.colas@cea.fr](mailto:paul.colas@cea.fr)

2) Development of innovative resistive GEM alpha detectors for earthquakes prediction and homeland security (INFN Bari / UNAM, Mexico / INFN Padova / INFN Frascati)  
Contact: [vladimir.peskov@cern.ch](mailto:vladimir.peskov@cern.ch)

2011 Common Projects:

3) MPGDs technology laboratory for training, development, fabrication, applications and innovation (Universidad Antonio Nariño, Columbia / Brookhaven National Laboratory/ Helsinki Institute of Physics / HEP Tech / GSI Helmholtzzentrum) Contact: [director.sistemas.complejos@uan.edu.co](mailto:director.sistemas.complejos@uan.edu.co)

4) A low mass microbulk with real XY strips structure (NCSR Demokritos / Saclay/ Laboratorio de Física Nuclear y Astropartículas, Universidad de Zaragoza / CERN )  
Contact: [geral@inp.demokritos.gr](mailto:geral@inp.demokritos.gr)

1) High resolution UV scanner for MPGD applications" (Wigner FCP/INFN Trieste/ INFN Bari )  
Contact: [Dezso.Varga@cern.ch](mailto:Dezso.Varga@cern.ch)

2012 Common Projects:

2) Large-area THGEM detector evaluation with SRS electronics  
(Weizmann/Coimbra/Aveiro) Contact: [amos.breskin@weizmann.ac.il](mailto:amos.breskin@weizmann.ac.il)

3) R&D on large area GEMs for the ALICE TPC upgrade (GSI/ Tokyo / UNAM)  
Contact: [chilo.garabatos.cuadrado@cern.ch](mailto:chilo.garabatos.cuadrado@cern.ch)

- ❖ Each Common Project (CP) should be evaluated annually
  - The first review should occur 12 months after the award approval notice
  
- ❖ The primary goals of the review would be:
  - 1) Evaluation of status of the CP with respect to the originally approved project description
  - 2) Adherence to the rules for RD51 CP's
  - 3) Status of the use of the approved RD51 funds
  - 4) Prospects for completion of the CP and expected time of completion
  - 5) Evaluation of potential benefit(s) to RD51 and HEP community
  - 6) Opportunity for guidance from the reviewers towards successful completion of the CP
  
- Two reviewers with requisite expertise will be drawn from the HEP community:
  - Reviewers to be nominated by the Chair and Deputy Chair of the CB.
  - Approval of reviewers by the RD51 MB.
  - A reviewer should not currently be receiving support for a RD51 CP.
  
- ❖ Each CP to be reviewed will submit a report to the Deputy Chair of the CB at least one month ahead of the start of the review.

# RD51 Common Projects

Potential to streamline procedures, evaluation process  
and outcome for the community

## 1) Evaluation of current Common Projects

Seven projects in progress.

Spring 2014 – request sent for CP progress reports

Expert reviewers selected from RD51 community

Pair of reviewers/CP – one combined report from each pair

Status of reviews: 6/7 reports received, 3/6 reviews received

- pursuing the completion of the remaining reviews
- reviews will be considered by RD51 MB

=> Modification of evaluation procedure for future reviews:

- keep pairs of reviewers, but ask for **independent reports**

## 2) New Common Project requests

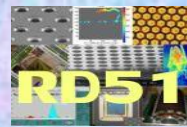
Four new projects proposed.

Under consideration by the MB.

A. White

Silvia Dalla Torre – CB Chair  
Andy White – CB Deputy Chair

# WG7: Common Test Beam Facility at H4 SPS

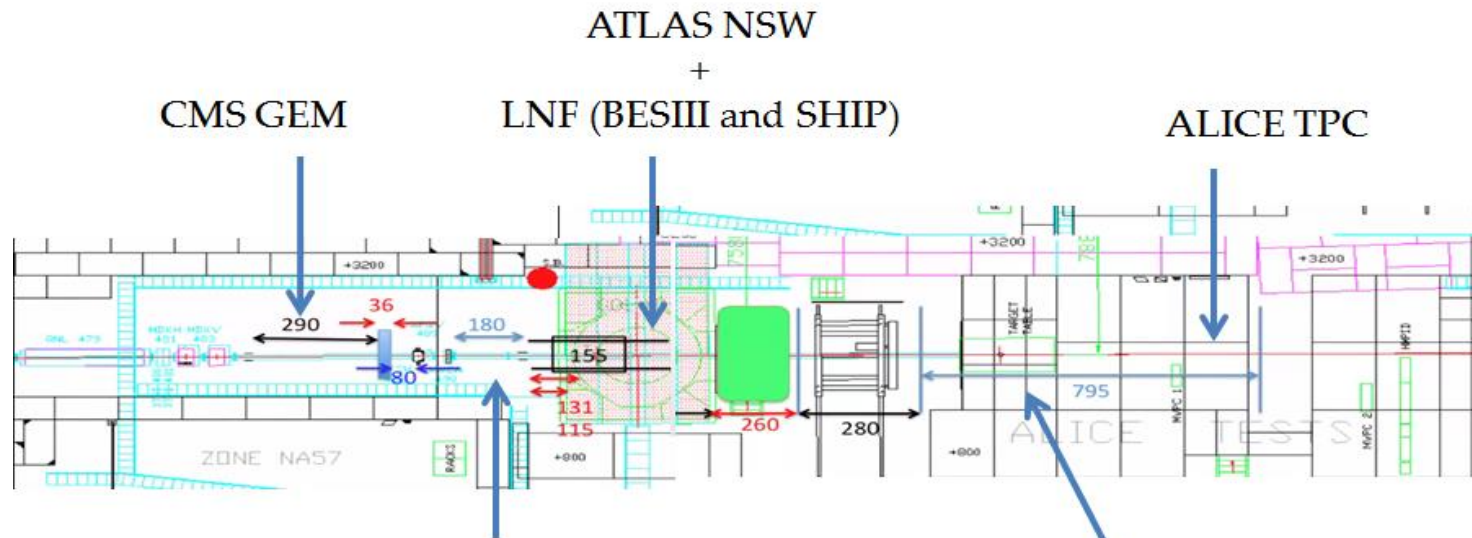


2014 RD51 test beam period (Nov 26 - Dec 15): based on

<http://ps-schedule.web.cern.ch/ps-schedule/schedules/sp/2014/v205/SPSDetailedSchedule.pdf>

November						December														
25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MD	MD					GIF++		MD						SCRUBBING						
NO	NO	BEAM (Main User)				BEAM (Parasitic)		NO BEAM	BEAM (Main User)				NO BEAM	BEAM (Main User)						
NO	NO	From 26/09 -7pm				From 01/12 -7pm		NO BEAM	From 03/12 -7pm				NO BEAM	From 10/12 -7pm						
NO	NO	Until 01/12 -7am				Until 03/12 -7am		NO BEAM	Until 08/12 -9am				NO BEAM	Until 15/12 -7am						
Installation (?)	Installation					Absorber OUT		ALICE Detectors In												

Preliminary Layout:



WIS/Aveiro/Coimbra  
Large single-stage THGEM detectors

LAPP/UA/NCSR/IRFU  
Resistive micromegas for calorimetry

E. Oliveri,  
Y. Tsipolitis

# WG7: Common Test Beam Facility at H4 SPS



6 RD51 groups expressed interest to participate → details in WG7 session on friday

- ❖ **ALICE TPC Upgrade with MPGD**  
Specific Requirements: End of the beam line (Shower)  
chilo.garabatos.cuadrado@cern.ch, alexander.deisting@cern.ch
- ❖ **ATLAS NSW Project (micromegas)**  
Specific Requirements: GOLIATH  
paolo.iengo@cern.ch, Theodoros.Alexopoulos@cern.ch
- ❖ **CMS GEM Muon Upgrade : GEM Collaboration**  
Specific Requirements: One Tracker and APV/SRS & VFAT/TURBO readout  
jeremie.alexandre.merlin@cern.ch, brian.l.dorney@cern.ch
- ❖ **FRASCATI - Triple GEM in magnetic Field (BESIII and Ship experiment)**  
Specific Requirements: GOLIATH, Mixer with Isobutane  
Giovanni.Bencivenni@lnf.infn.it, Danilo.Domenici@lnf.infn.it, giulietto.felici@lnf.infn.it
- ❖ **WIS/Aveiro/Coimbra - Large single-stage THGEM detectors**  
Specific Requirements: One Tracker and APV/SRS readout  
shikma.bressler@cern.ch, cdazevedo@ua.pt
- ❖ **LAPP/UA/NCSR/IRFU – Resistive micromegas for calorimetry**  
Specific Requirements: End of the beam line  
Theodoros.Geralis@cern.ch, chefdevi@cern.ch

E. Oliveri,  
Y. Tsipolitis

# WG7: 2015 SPS RD51 Test - Beam



Dear Colleagues,

This is the official call for beam requests for the 2015 PS and SPS proton Fixed Target Program. Please submit a written request preferably by e-mail to [SPS.Coordinator@cern.ch](mailto:SPS.Coordinator@cern.ch) at the latest by

**Saturday 15th of November 2014.**

Please find attached :

[Message from the SPS coordinator:](#)

1) The Beam Request Form.

also available here: [http://sps-schedule.web.cern.ch/sps-schedule/2015/beam\\_request\\_form\\_2015.docx](http://sps-schedule.web.cern.ch/sps-schedule/2015/beam_request_form_2015.docx)

2) General Conditions applicable to Experiments performed at CERN.

also available here: <http://committees.web.cern.ch/Committees/GeneralConditions.pdf>

3) The 2015 Injector Accelerator Schedule (Preliminary!).

In this schedule the proton run is from week 18 (SPS) or 19 (PS) to week 46 included also available here: [http://espace.cern.ch/bedep/BEDepartmentalDocuments/BE/Injector\\_Schedule\\_2015.pdf](http://espace.cern.ch/bedep/BEDepartmentalDocuments/BE/Injector_Schedule_2015.pdf)

E. Oliveri,  
Y. Tsipolitis

❖ Three RD51 test-beam periods in 2015 will be requested by the RD51:

→ June / August / November

❖ “Expression of Interest” will be coordinated by the WG7 Conveners

❖ RD51 equipments and support available if needed

❖ RD51 Equipments (no support in DESY) available if needed

**2015 DESY test beam**

→ Request should be sent by 4 November 2014

to [testbeam-coor@desy.de](mailto:testbeam-coor@desy.de):

You can find information on the DESY-II test beam on <http://testbeam.desy.de>

The DESY-II Test Beam Coordinators Ralf Diener, Norbert Meyners, Marcel Stanitzki



# Today: 14<sup>th</sup> RD51 Collaboration Meeting (Oct. 29-31, 2014)

<https://indico.cern.ch/event/348222/other> =standard

## ❖ Wednesday, October 29

09:30 – 10:10 RD51 Collaboration New

10:10 – 13:30 WG6 Production

13:30 – 14:30 Lunch

14:30 - 18:30 WG4 Software

18:30 - 20:00 RD51 Collab

## ❖ Thursday, October 30

09:30 – 10:00 V

10:00 - 12:00

12:00 - 13:00

13:30 -

## ❖ Friday

09:30 - → Physics Issues

14:30 – 16:00 Test Beams

The RD51 Meeting in Kolkata is open to ALL IWAD participants and Detector Instrumentation Experts

→ Please join us if you are interested in the MPGD technology (even if you are not a member of the RD51)

→ We strongly encourage young people to participate in the RD51 Meeting