

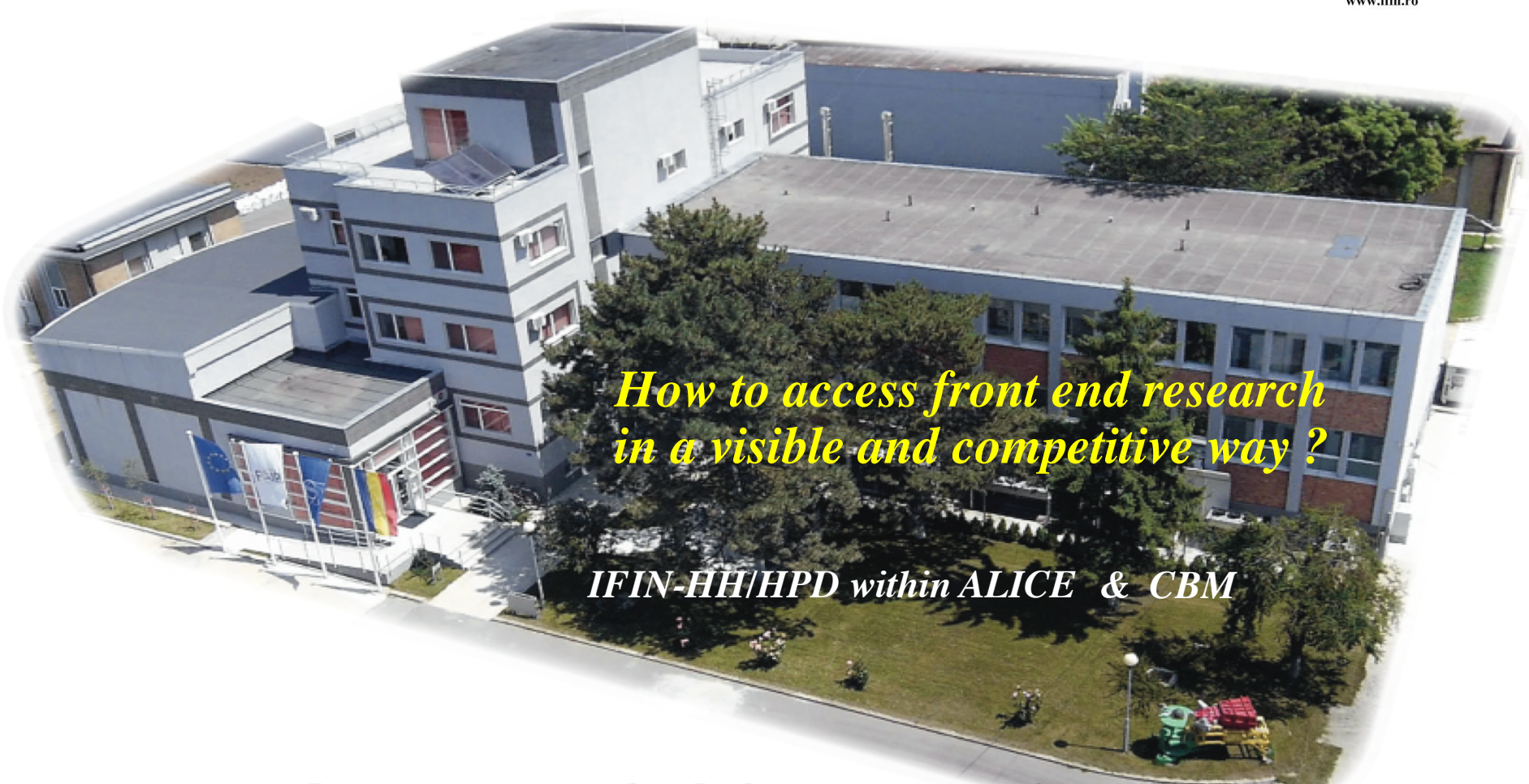
ALICE

CBM

NuPECC



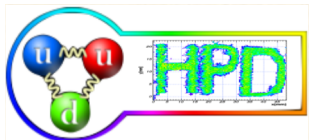
**NuPECC
Long Range Plan 2017
Perspectives
in Nuclear Physics**



*How to access front end research
in a visible and competitive way ?*

IFIN-HH/HPD within ALICE & CBM

HADRON PHYSICS DEPARTMENT



Don't start

vast projects

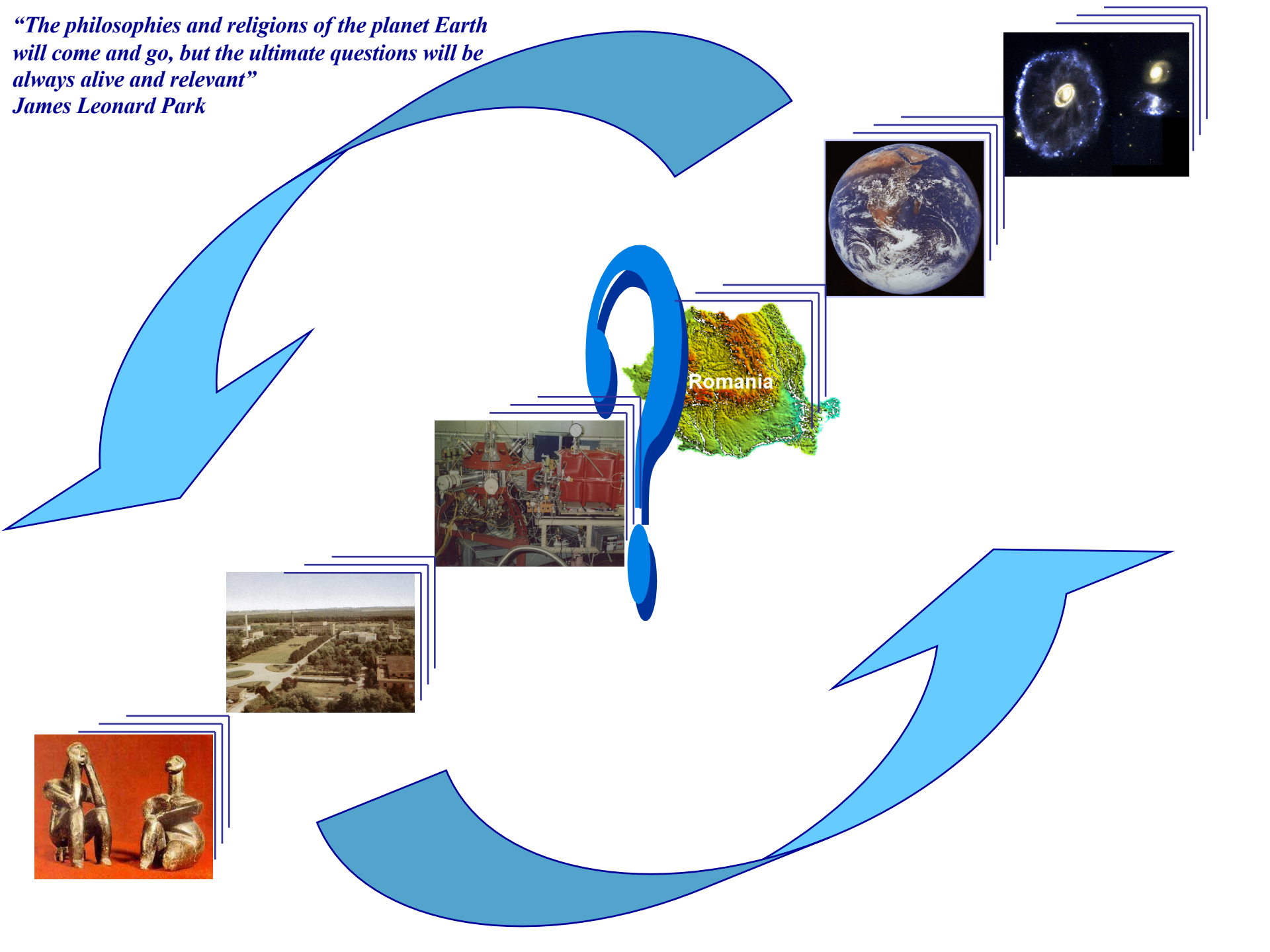
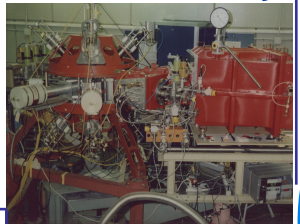
with

half vast ideas !

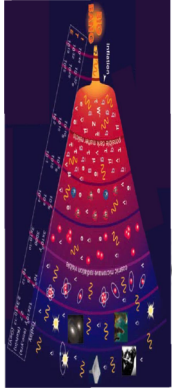
&

half experience !

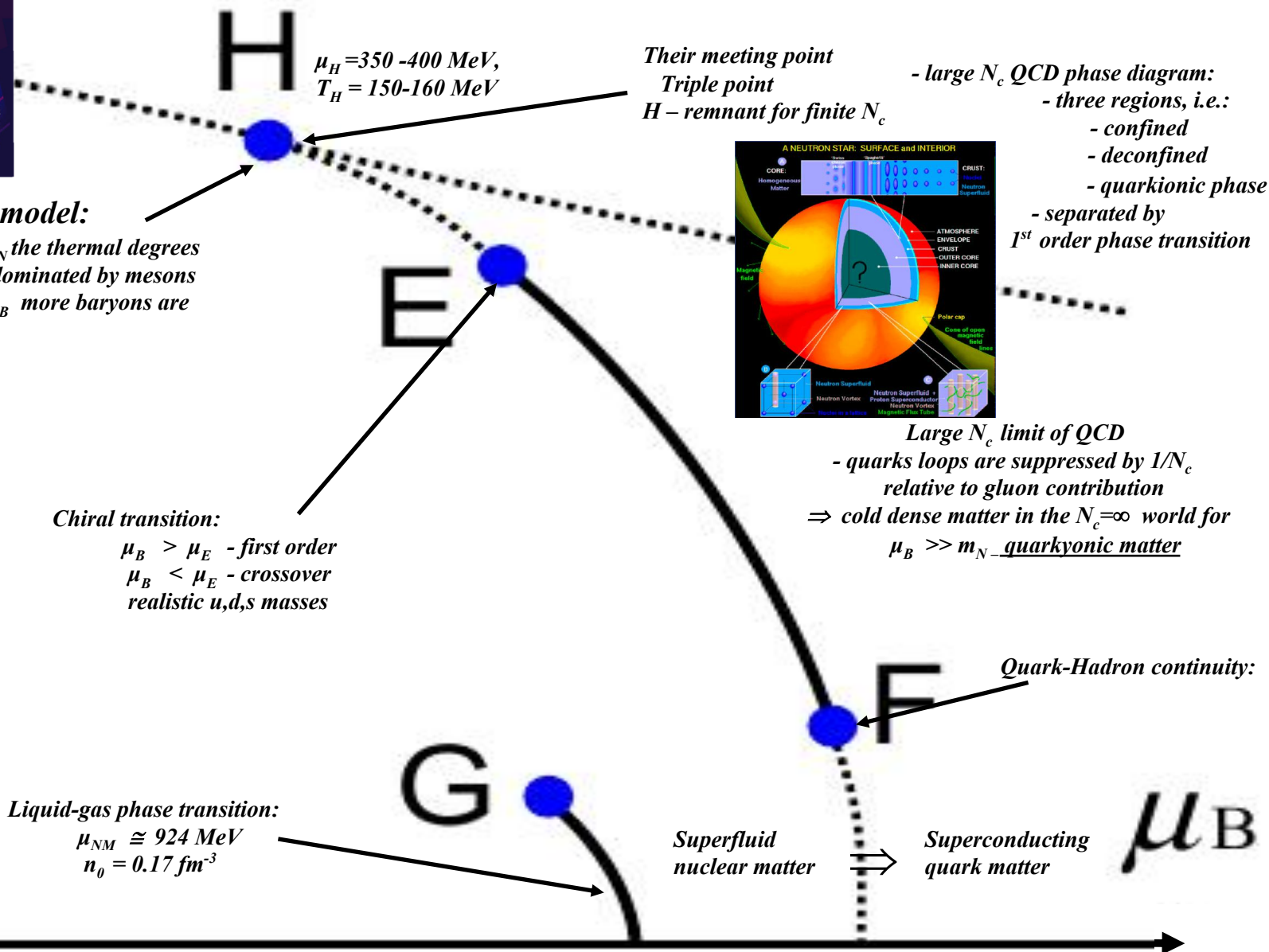
*“The philosophies and religions of the planet Earth
will come and go, but the ultimate questions will be
always alive and relevant”
James Leonard Park*



Physics motivation



T



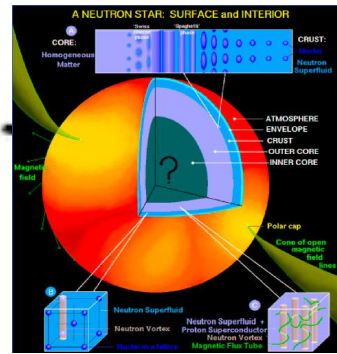
Statistical model:

- for $\mu_B \ll m_N$ the thermal degrees of freedom dominated by mesons
- for higher μ_B more baryons are excited

$\mu_H = 350 - 400 \text{ MeV}$
 $T_H = 150 - 160 \text{ MeV}$

Their meeting point
 Triple point
 H – remnant for finite N_c

- large N_c QCD phase diagram:
- three regions, i.e.:
- confined
- deconfined
- quarkionic phase
- separated by 1st order phase transition



Chiral transition:
 $\mu_B > \mu_E$ - first order
 $\mu_B < \mu_E$ - crossover
 realistic u,d,s masses

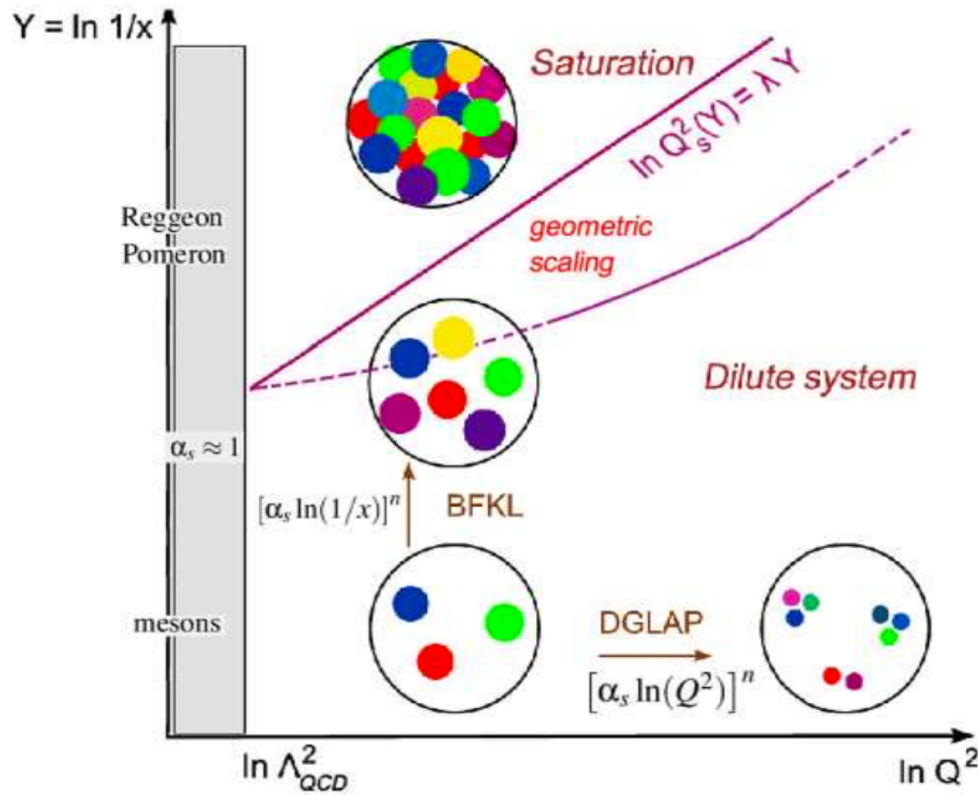
Large N_c limit of QCD
 - quarks loops are suppressed by $1/N_c$ relative to gluon contribution
 \Rightarrow cold dense matter in the $N_c = \infty$ world for $\mu_B \gg m_N$ - quarkyonic matter

Liquid-gas phase transition:
 $\mu_{NM} \cong 924 \text{ MeV}$
 $n_0 = 0.17 \text{ fm}^{-3}$

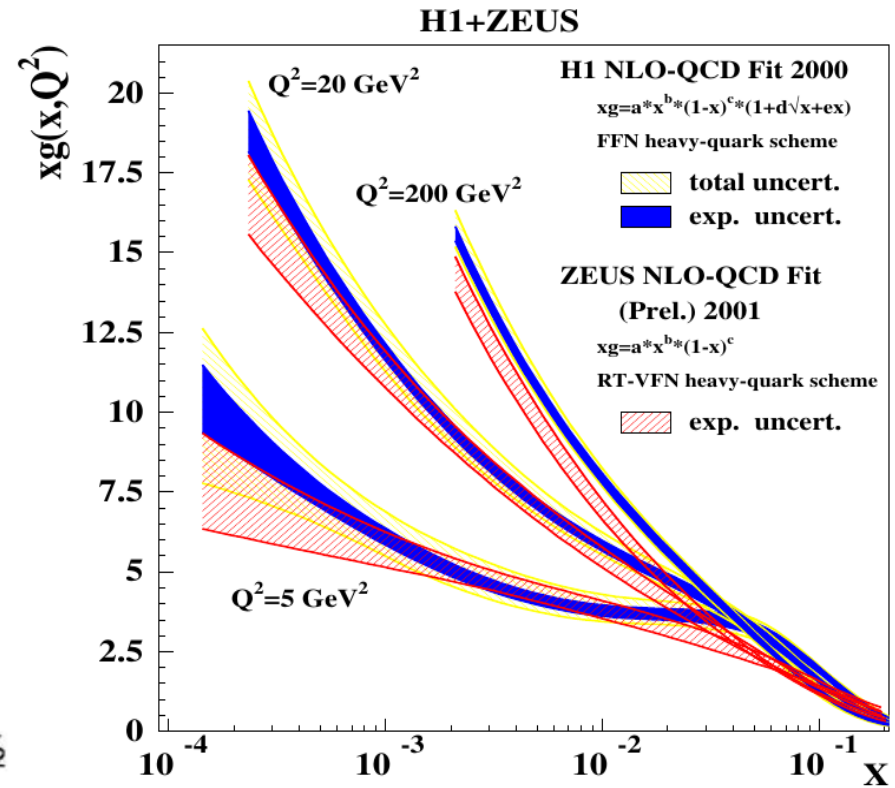
Quark-Hadron continuity:
 Superfluid nuclear matter \Rightarrow Superconducting quark matter

μ_B

Physics motivation



D. d'Enterria, Eur.Phys.J. A31(2007)816



M.Dittmar et al., Proceedings HERA-LHC Workshop
arXiv:[hep-ph]0511119

System	<i>Au-Au</i>	<i>Pb-Pb</i>	<i>Pb-Pb</i>	<i>pp</i>
$\sqrt{s}(\text{GeV})$	200	2700	5020	7000
$\frac{dN_g^{in}}{dyd^2b}(\text{fm}^{-2})$	≈ 4.7	≈ 11.8	≈ 15.9	≈ 18.7
f_{in}^g	≈ 0.9	≈ 2.3	≈ 3.1	≈ 3.6

Following A.H. Mueller
approximations NP A715(2003)20



Based on long term strategy and financial support on normal research projects from different national programs, in less than 4 years we succeeded to organize:

- a detector laboratory
- a small seminar room
- 11 offices
- a Data Center
- a modest workshop

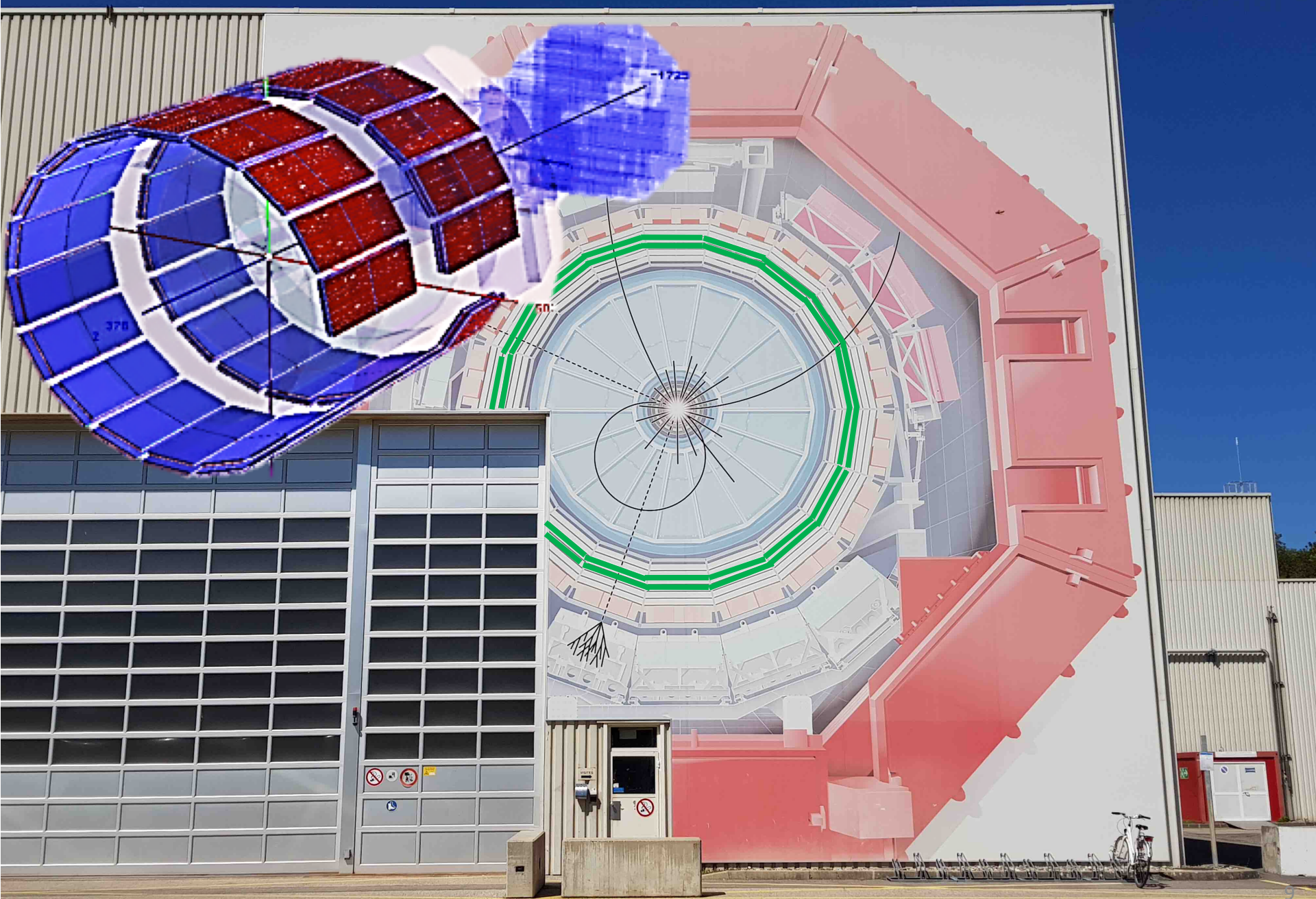
*"What in 2003 was a wonderful dream,
today is a wonderful reality"*

Harvey Newman

12.10.2006



HPD contribution to the ALICE Experiment





MonALISA Repository for ALICE



My jobs | My home dir | Catalogue browser | LEGO Trains ★ | Administration Section | ALICE Reports | Alert XML Feed | Firefox Toolbar | MonALISA GUI

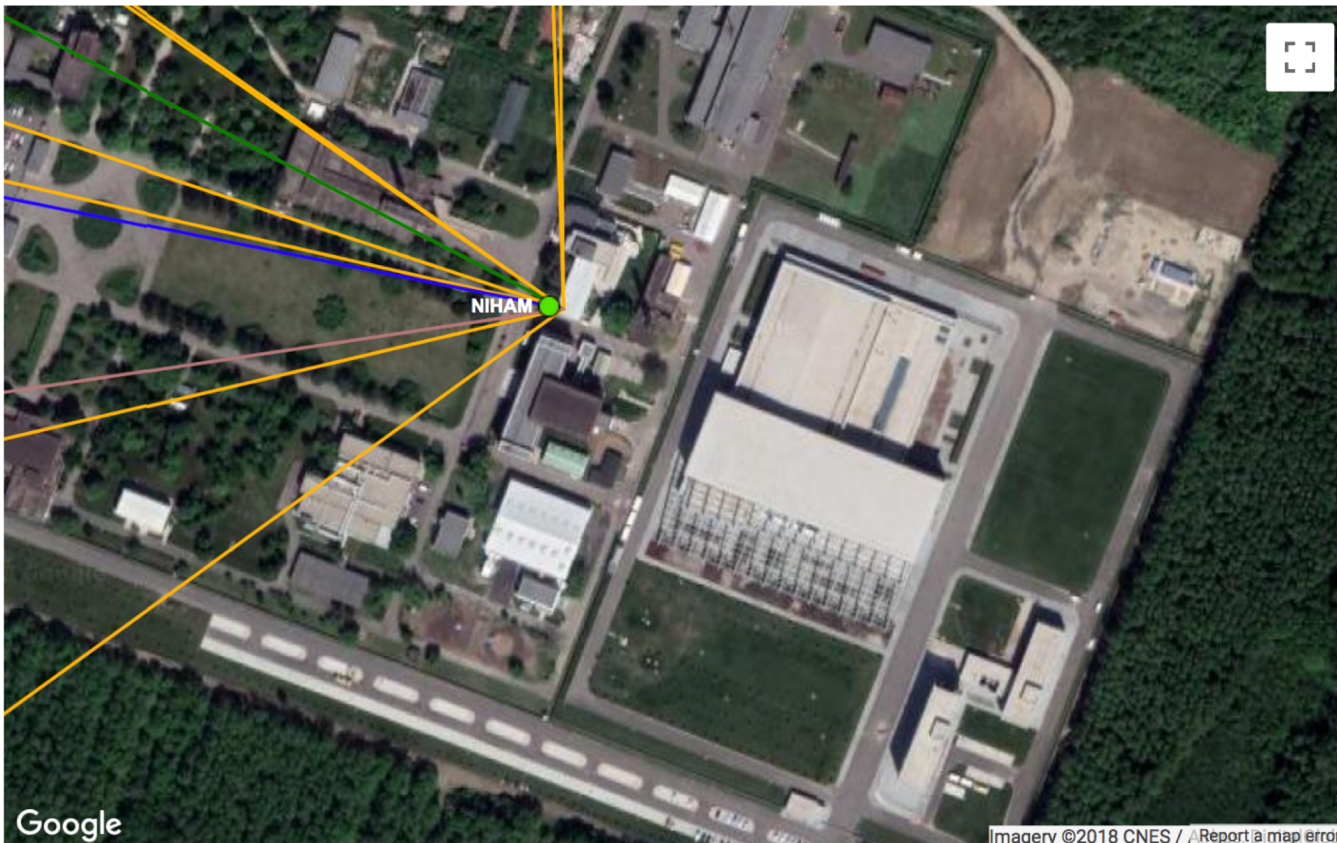
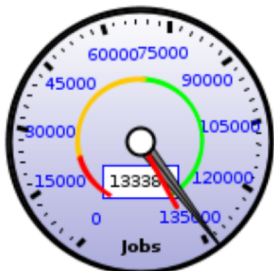
ALICE Repository

- ALICE Repository
- Google Map
- Shifter's dashboard
- Run Condition Table
- Production Overview
- Production info
- Job Information
- SE Information
- Services
- Network Traffic
- FTD Transfers
- CAF Monitoring
- SHUTTLE
- Build system
- HepSpec
- Dynamic charts

close all

This page: bookmark, URL

Active jobs trend



Google

Imagery ©2018 CNES / Report a map error

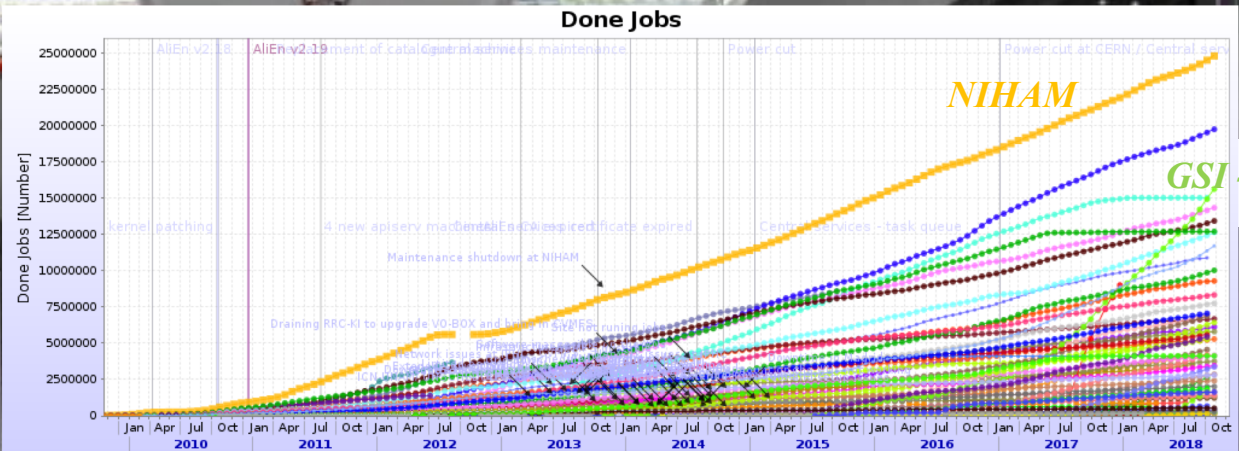
- Running jobs
- Running jobs but no ML info
- Site service problem(s) prevents job execution
- No jobs match the site resources
- ML service down & no running j

Map options

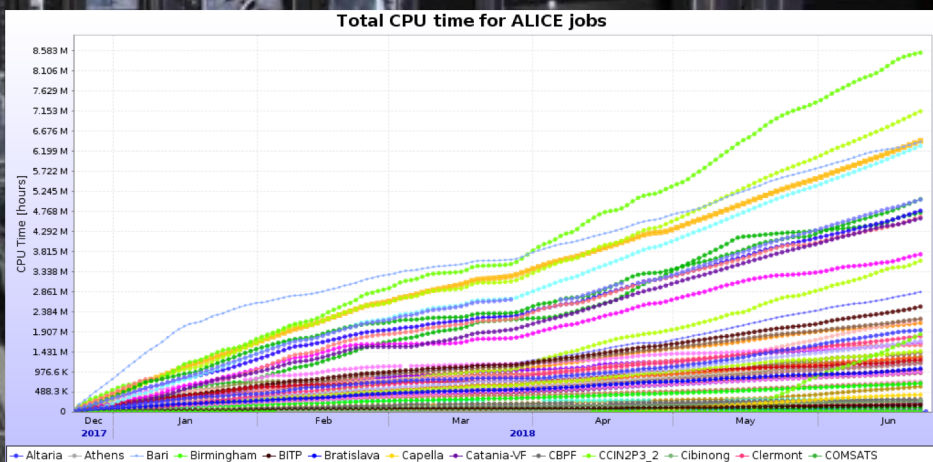
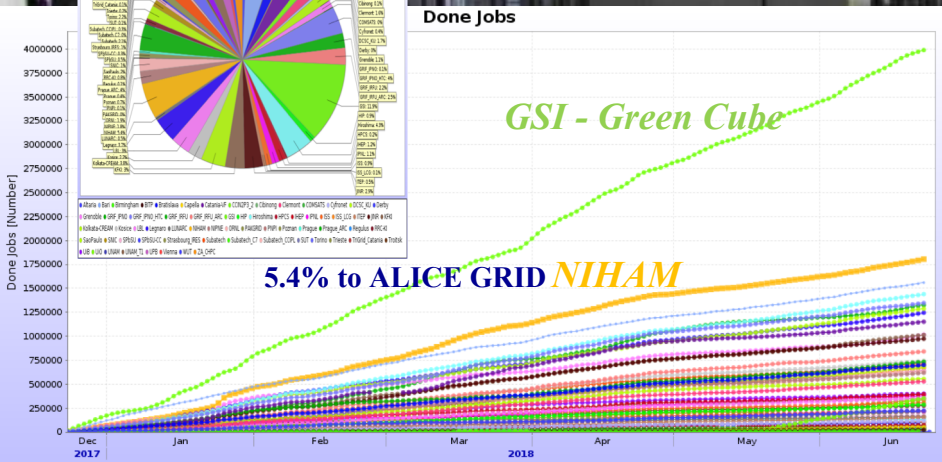
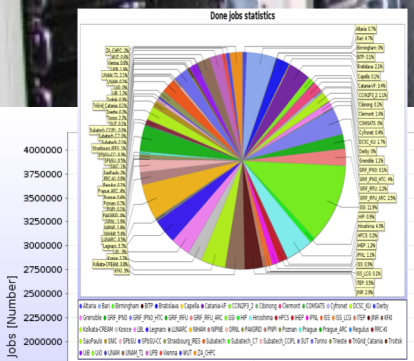
Show xrootd transfers

NIHAM

Tier2 component of ALICE GRID



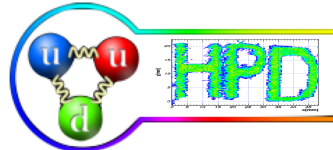
- Aalborg — Aleria — Athens — Bandung — Bari — Bari-Torrent — Birmingham — BITP — BITP_ARC — Bologna — Bratislava — Cagliari — Capella
- Catania — Catania-VF — CBPF — CCIN2P3_2 — Cibinong — Clermont — Cloud — COMSATS — CondorCloud — CondorSite — CSC — CyberSar
- CyberSar-CREAM — Cyfronet — DCSC_KU — Derby — Dortmund — Grenoble — GRIF_IPNO — GRIF_IPNO_HTC — GRIF_IRFU — GRIF_IRFU-CVMFS
- GRIF_IRFU_ARC — GRIF_IRFU_SHARED — GSI — GSI-CREAM — GSI-SCLAB — GSI-SE2 — GSI-SGE — GSI_2 — GSI_AF — HHLR_GU — HIP — Hiroshima — HPCS
- ICYB — ICYB_ARC — IHEP — IHEP-CREAM — IPNL — ISMA — ISS — ISS_LCG — ITEP — ITEP-CREAM — JINR — JINR-CREAM — Juno — KFKI — KISTI-CREAM
- KNU — Kolkata — Kolkata-CREAM — Kosice — KPI — LBL — Legnaro — Legnaro-CREAM — LLNL — LUNARC — Madrid — MEPHI — NECTEC — Nemesis
- NERSC — NIHAM — NIPNE — NSC — ORNL — ORNL_Titan — OSC — Oxford — PAKGRID — pcalice92.cern.ch — PDC — Phoenix — Pikachu — PLANCTON
- PNPI — Polaris — Poznan — Prague — Prague-CREAM — Prague_ARC — Regulus — RRC-KI — SaoPaulo — SARFTI — SGE — SINP — SNIC — SPbSU
- SPbSU-CC — SPbSU-CREAM — Strasbourg_IRES — Subatech — Subatech_C7 — Subatech_CCIPL — SUT — TACC — Talca — Torino — Torino-CREAM
- Torino-HPC — Torino-Torrent — Trieste — TriGrid_Catania — Troitsk — Troitsk-CREAM — Trujillo — Tsukuba — UF — UIB — UIO — UNAM
- UNAM_T1 — UPB — Vienna — WONDERLAND — Wuhan — WUT — Yerevan — ZA_CHPC



- Aleria — Athens — Bari — Birmingham — BITP — Bratislava — Capella — Catania — Catania-VF — CCIN2P3_2 — Cibinong — Clermont — COMSATS — Cyfronet
- DCSC_KU — Derby — Grenoble — GRIF_IPNO — GRIF_IPNO_HTC — GRIF_IRFU — GRIF_IRFU_ARC — GSI — GSI_AF — HIP — Hiroshima — HPCS
- IHEP — IPNL — ISMA — ISS — ITEP — JINR — KFKI — KNU — Kolkata-CREAM — Kosice — LBL — Legnaro — LUNARC — Nemesis — NIHAM — NIPNE — ORNL
- Oxford — PAKGRID — Phoenix — Pikachu — PNPI — Poznan — Prague — Prague-CREAM — Regulus — RRC-KI — SaoPaulo — SARFTI — SNIC — SPbSU
- SPbSU-CC — Strasbourg_IRES — Subatech — Subatech_C7 — Subatech_CCIPL — SUT — Torino — Torino-HPC — Trieste — TriGrid_Catania — Troitsk
- Trujillo — UIB — UIO — UNAM — UNAM_T1 — UPB — Vienna — WUT — ZA_CHPC



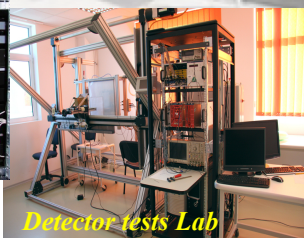
MINISTERUL CERCETĂRII ȘI INOVĂRII



Hadron Physics Department



Data Centre



Detector tests Lab



Detector Lab assembling clean rooms



Technological transfer Lab



Detector tests Lab

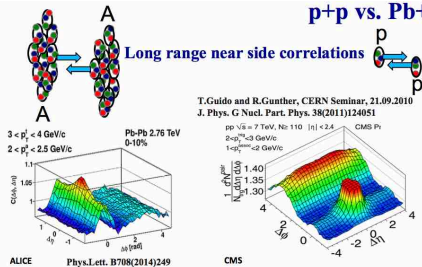


Bonding Lab

“With no doubt this department has to be ranked excellent as it has an outstanding impact and visibility in both science and technology within the various international collaborations where it is involved” - 2012 International Evaluation Committee

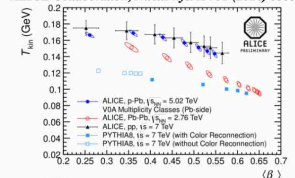
HPD - Physics - within ALICE or related to ALICE

p+p vs. Pb+Pb @ LHC



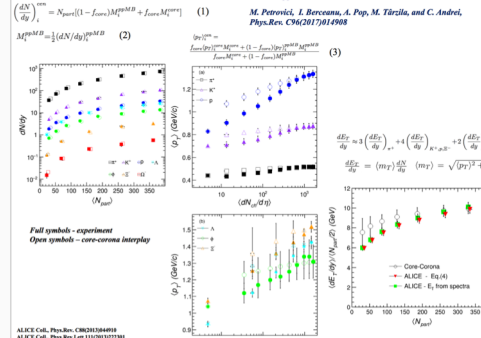
Transverse flow - BGBW fits

ALICE Collaboration, Nucl.Phys. A 931 (2014) c888

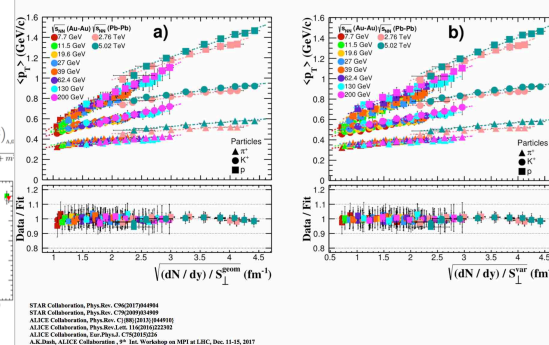


Core-Corona effect

M. Petrović, I. Beceanu, A. Pop, M. Tárilo, and C. Andrei, Phys.Rev. C96(2017)044908

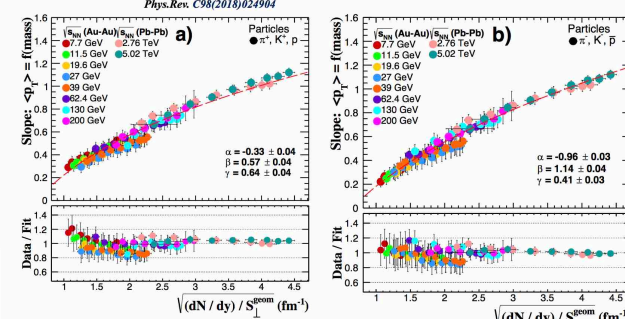


$\langle p_T \rangle$ vs. $[(dN/dy)/S_{perp}]^{1/2}$

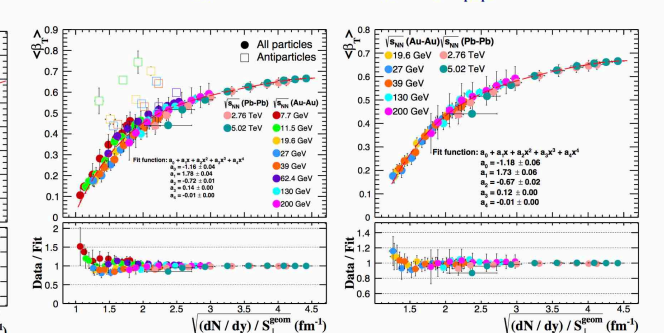


The slope of $\langle p_T \rangle = f(\text{mass})$ vs. $[(dN/dy)/S_{perp}]^{1/2}$

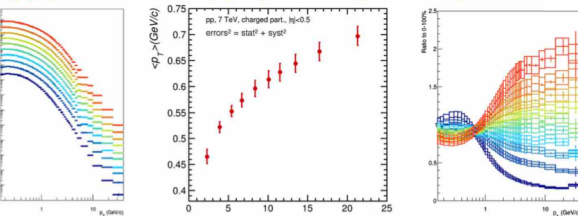
M. Petrović, A.Lindner, A. Pop, M. Tárilo, and I. Beceanu, arXiv: hep-ph/1805.04666; Phys.Rev. C99(2019)024904



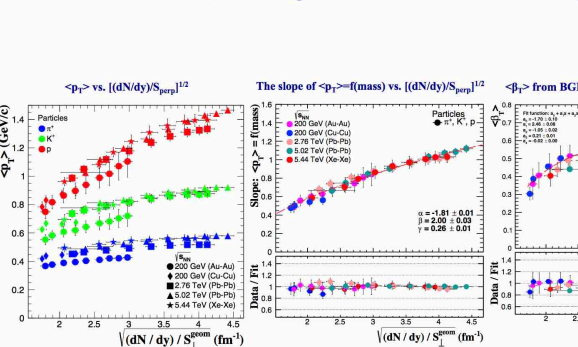
$\langle \beta_T \rangle$ from BGBW fits vs. $[(dN/dy)/S_{perp}]^{1/2}$



p_T spectra, ratios, $\langle p_T \rangle$ of unidentified charged hadrons



Cu-Cu; Au-Au @ RHIC vs. Xe-Xe and Pb+Pb @ LHC



p+p vs. Pb+Pb @ LHC

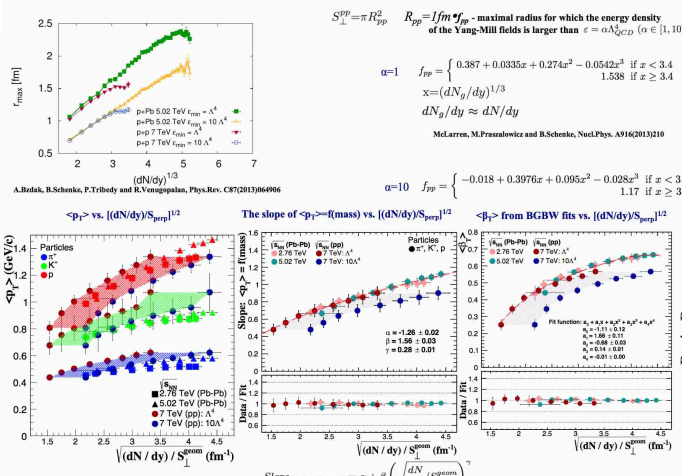
$$S_{pp}^{\text{eff}} = \pi R_{pp}^2 \quad R_{pp} = l/m \sqrt{m_{pp}} \text{ - maximal radius for which the energy density of the Yang-Mills fields is larger than } \epsilon = \alpha \Lambda_{\text{QCD}}^3 \text{ (} \alpha \in [1, 10] \text{)}$$

$$\alpha = 1 \quad f_{pp} = \begin{cases} 0.387 + 0.0335x + 0.274x^2 - 0.0542x^3 & \text{if } x < 3.4 \\ 1.538 & \text{if } x \geq 3.4 \end{cases}$$

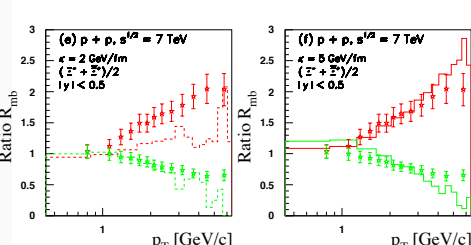
$$x = (dN_p/dy)^{1/3}$$

$$dN_p/dy \approx dN/dy$$

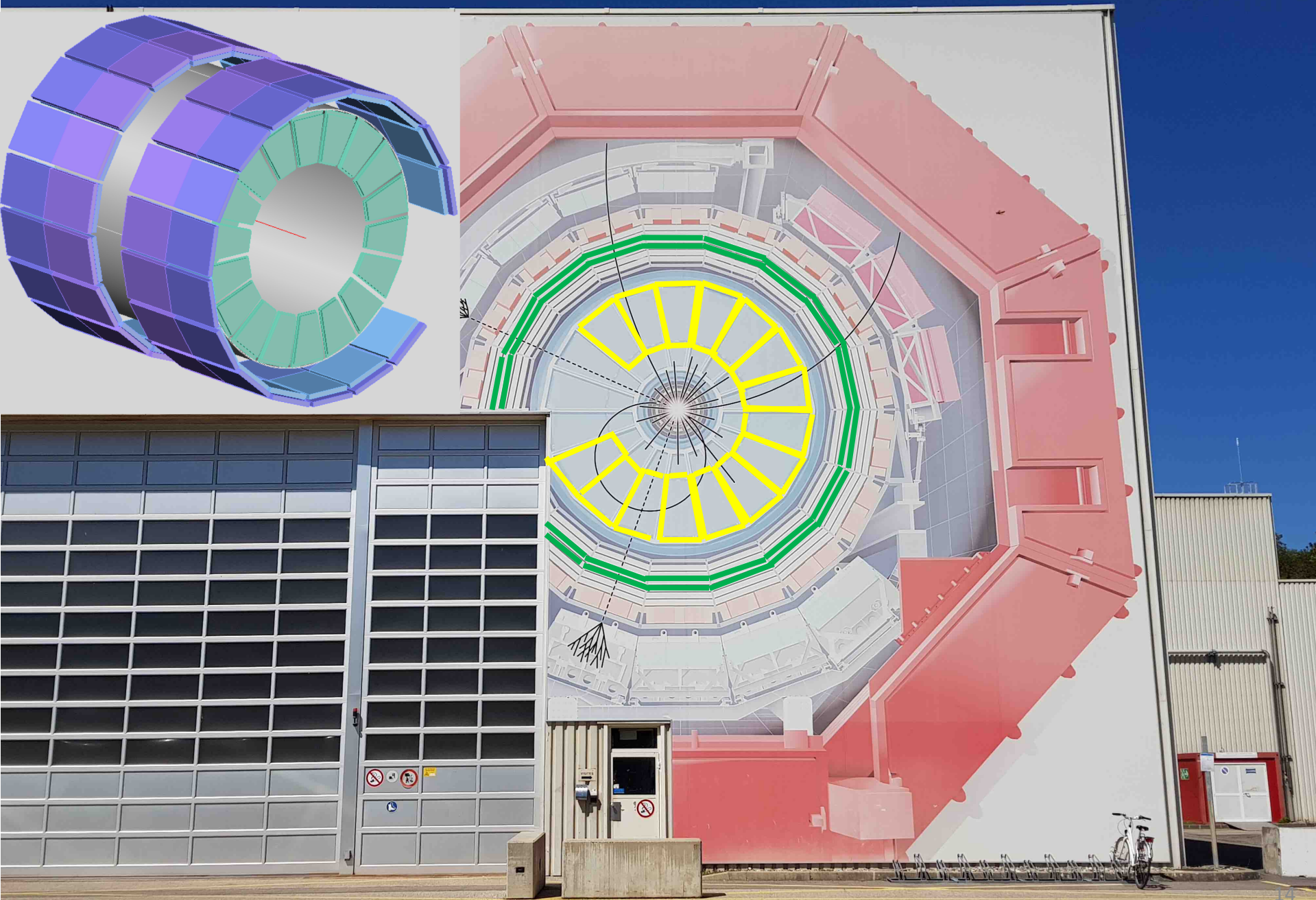
McLerran, M.Frasinowicz and B.Schenke, Nucl.Phys. A916(2013)210



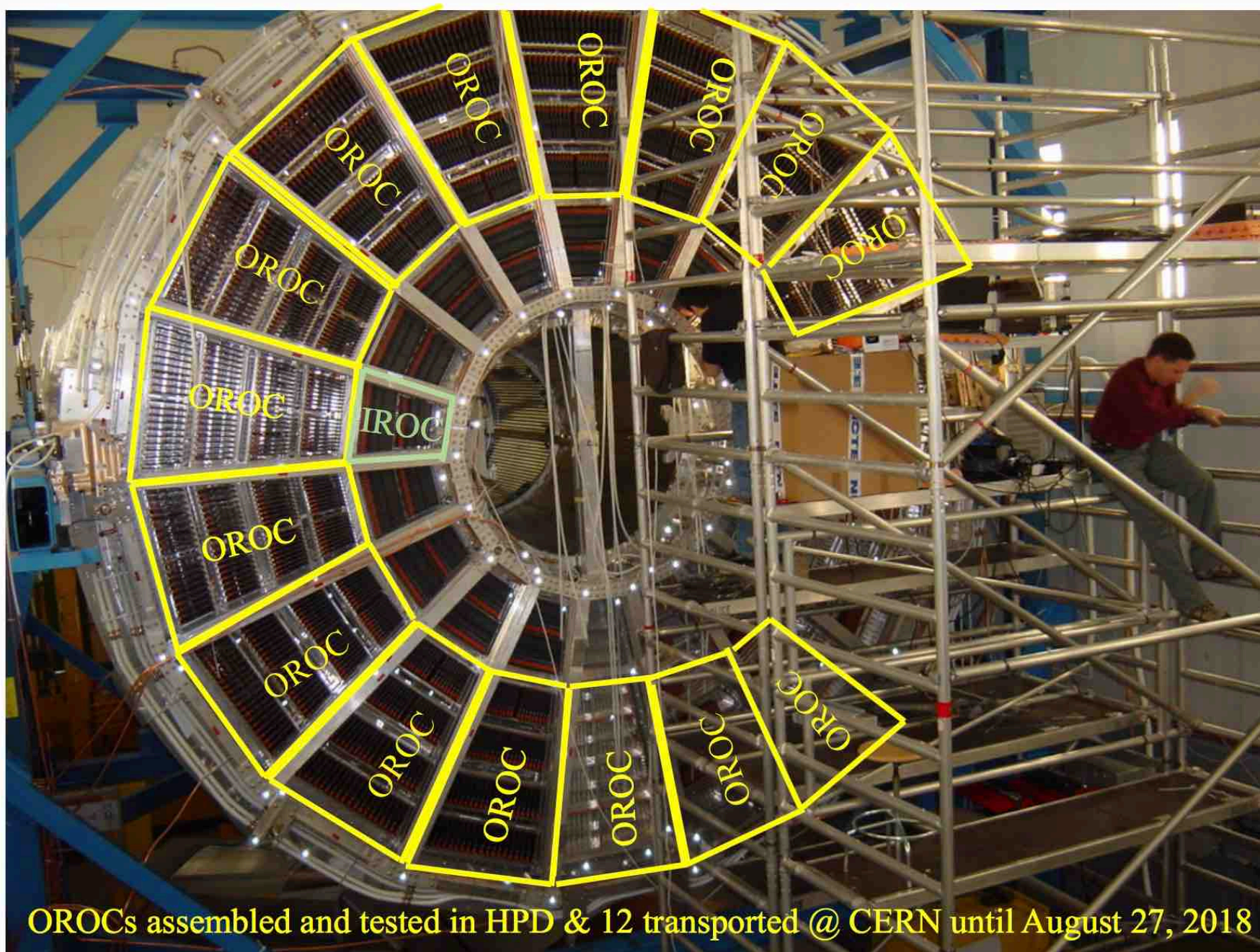
pp - Pb+Pb similarities @ LHC within HIJING/BB v2.0 model



HPD contribution to the ALICE Experiment

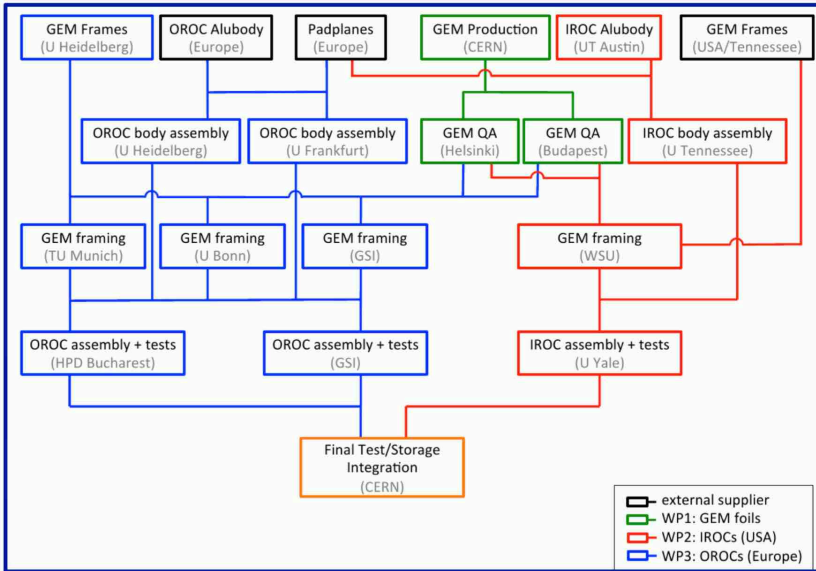


ALICE-TPC - Upgrade



OROCs assembled and tested in HPD & 12 transported @ CERN until August 27, 2018

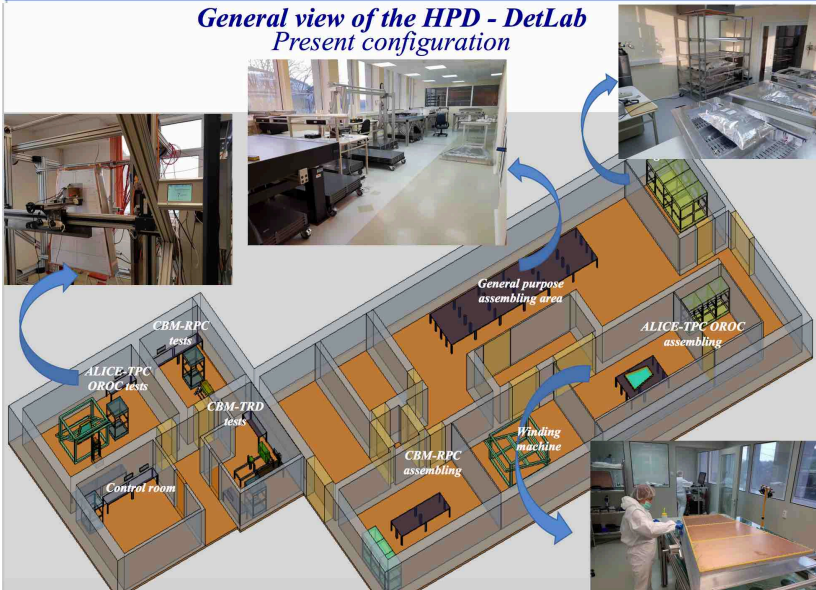
HPD contribution to the ALICE Experiment



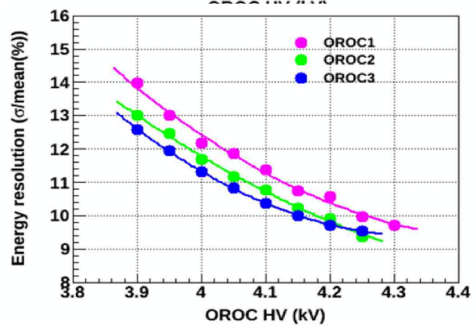
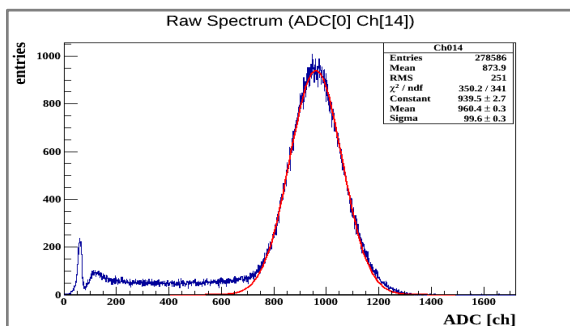
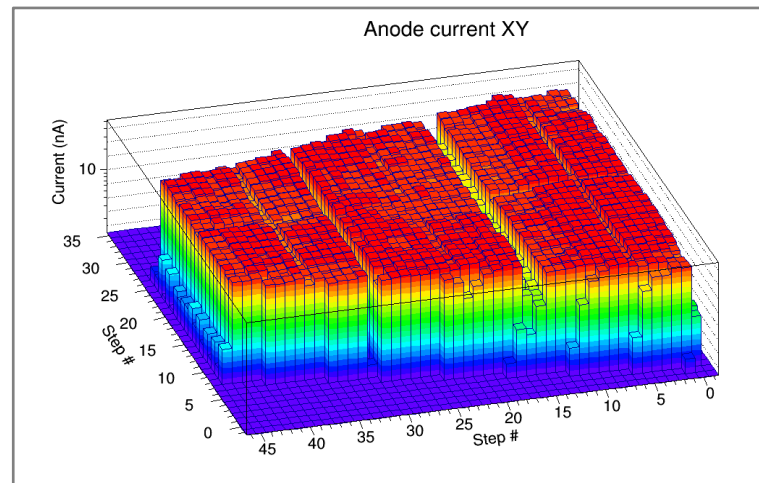
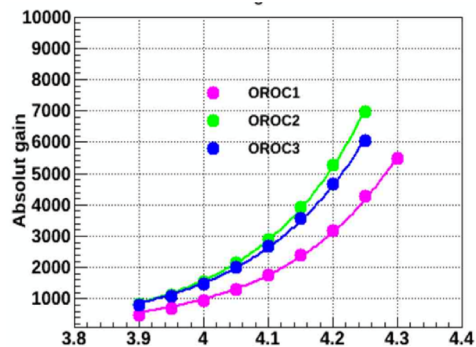
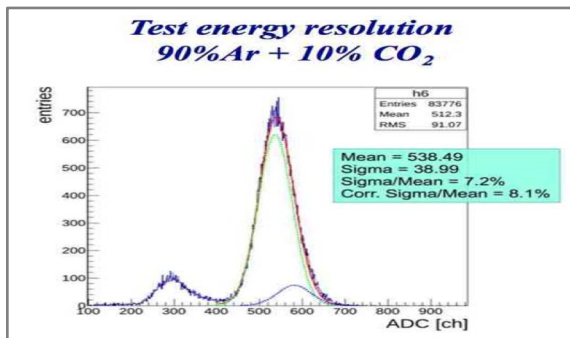
ALICE-TPC - Upgrade - HPD activities



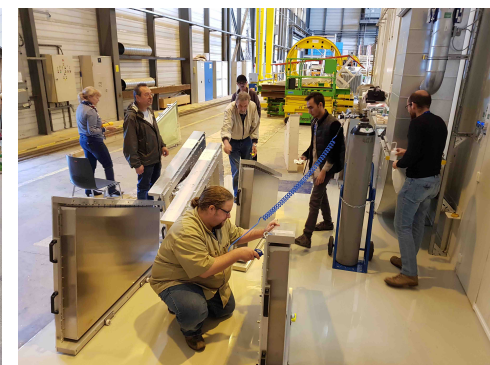
General view of the HPD - DetLab Present configuration



ALICE-TPC - Upgrade - HPD activities



<https://youtu.be/ZHBgGKamUc8>



Highly compact summary of our contribution in developing a new generation of:

- High counting rate RPCs
- High counting rate TRD
- TRD - FEE

18 years of RPC R&D In Hadron Physics Department NIPNE - Bucharest

1999-2000
Photo plates
Active area: 300 mm x 400 mm
Gap: 1.5 mm
Pitch: 2.5 x 1.25 mm, 1.4 mm gap

2008
M. Percec et al. NIM 5662/2007/0229
M. Percec et al. Rom.Jour.Phys. 56(2011)249

2009
M. Percec et al. NIM 5662/2007/0229
M. Percec et al. Rom.Jour.Phys. 56(2011)249

2010
M. Percec et al. NIM 5662/2007/0229
M. Percec et al. Rom.Jour.Phys. 56(2011)249

2011
M. Percec et al. NIM 5662/2007/0229
M. Percec et al. Rom.Jour.Phys. 56(2011)249

2012
M. Percec et al. NIM 5662/2007/0229
M. Percec et al. Rom.Jour.Phys. 56(2011)249

2013
M. Percec et al. NIM 5662/2007/0229
M. Percec et al. Rom.Jour.Phys. 56(2011)249



14 years of in-house and in-beam tests Of RPC & TRD prototypes for CBM @ FAIR by HPD members

2004 SIS18-GSI

2005 SIS18-GSI

2006 HPD - Bucharest

2007 HPD - Bucharest

2008 ELBE Rosendorf

2009 SIS18-GSI

2010 PS-CERN T10

2011 PS-CERN T10

2012 SIS18-GSI

2013 PS-CERN T9

2014 PS-CERN T9

2015 SPS-CERN H4

14 years of TRD R&D In Hadron Physics Department NIPNE - Bucharest

2004
- ALICE type pad plane
- tilted pads 7.5 x 80 mm
- $\sigma_x \approx 350 \mu\text{m}$
- NIM A579/2007/061
- NIM A581/2007/406

2006
- Rectangular pads 5 x 10 mm²
- $\sigma_x \approx 160 \mu\text{m}$
- NIM A585/2006/083
- Rom.Jour.Phys. 55(2010)324

2008
- split 10 x 80 mm²
- $\sigma_x \approx 320 \mu\text{m}$; $\sigma_y \approx 5.5 \text{ mm}$
- Rom.Jour.Phys. 56(2011)654
- NIM A714/2013/117

2009
- split 10 x 80 mm²
- $\sigma_x \approx 327 \mu\text{m}$
- $\sigma_y \approx 6.53 \text{ mm}$
- NIM A732/2013/375

2010
- split 7 x 27 mm²
- $\sigma_x \approx 200 \mu\text{m}$
- NIM A - in progress

2011
- split 7 x 27 mm²
- $\sigma_x \approx 355 \mu\text{m}$
- $\sigma_y \approx 1.4 \text{ mm}$

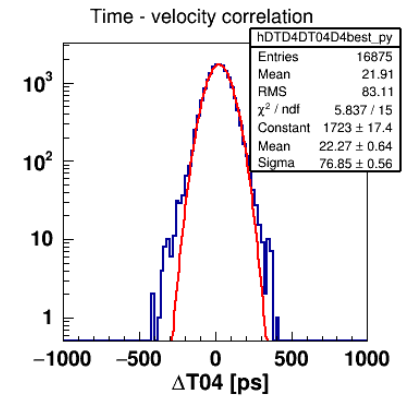
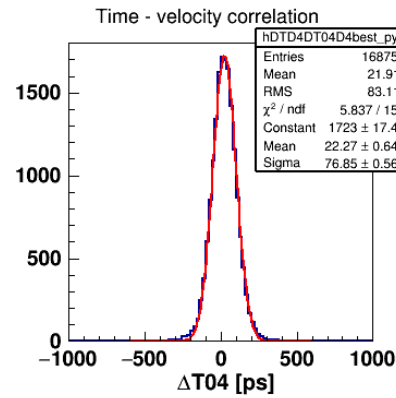
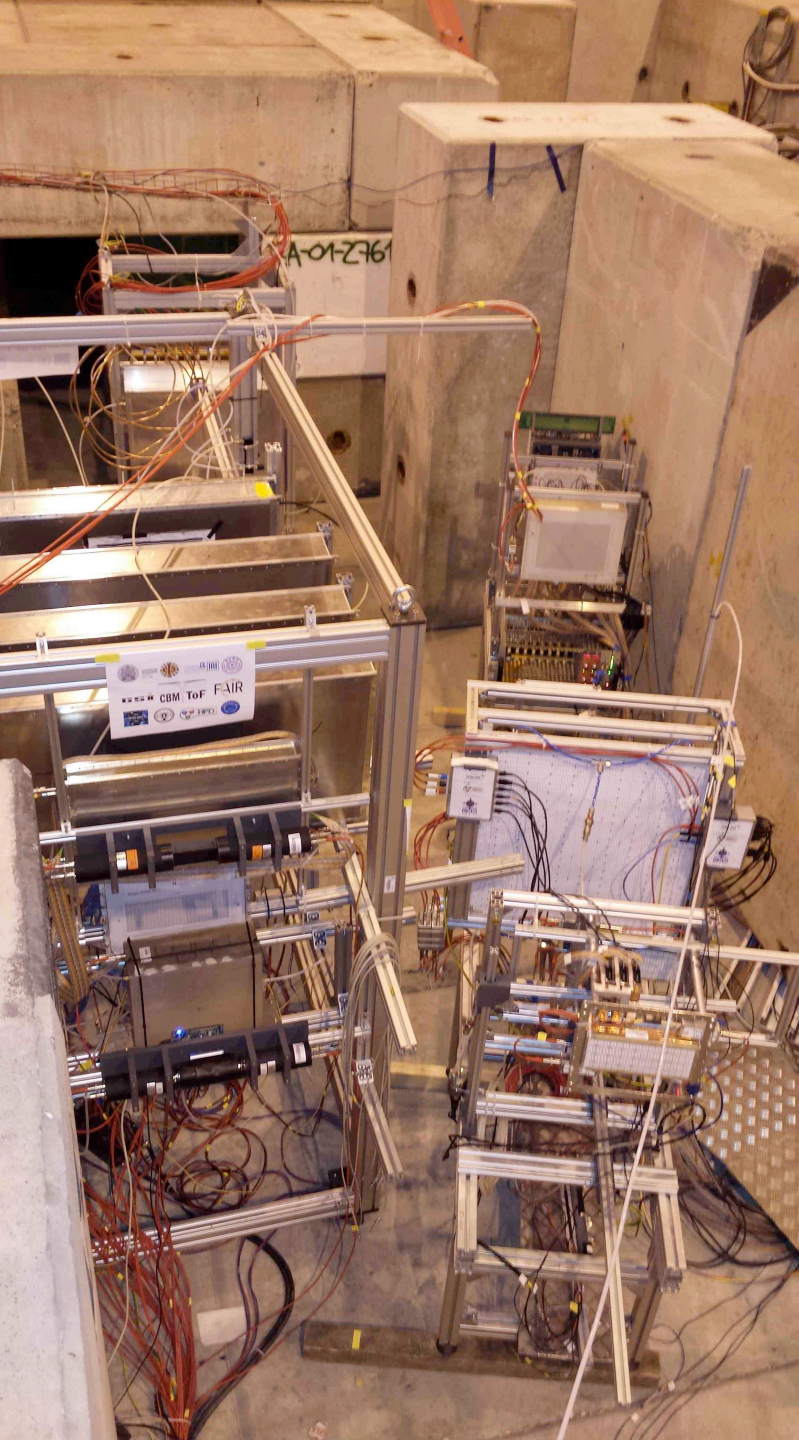
2012
- split 7 x 27 mm²
- $\sigma_x \approx 355 \mu\text{m}$
- $\sigma_y \approx 1.4 \text{ mm}$

2013
- split 7 x 27 mm²
- $\sigma_x \approx 355 \mu\text{m}$
- $\sigma_y \approx 1.4 \text{ mm}$

2014
- split 7 x 27 mm²
- $\sigma_x \approx 355 \mu\text{m}$
- $\sigma_y \approx 1.4 \text{ mm}$

2015
- split 7 x 27 mm²
- $\sigma_x \approx 355 \mu\text{m}$
- $\sigma_y \approx 1.4 \text{ mm}$

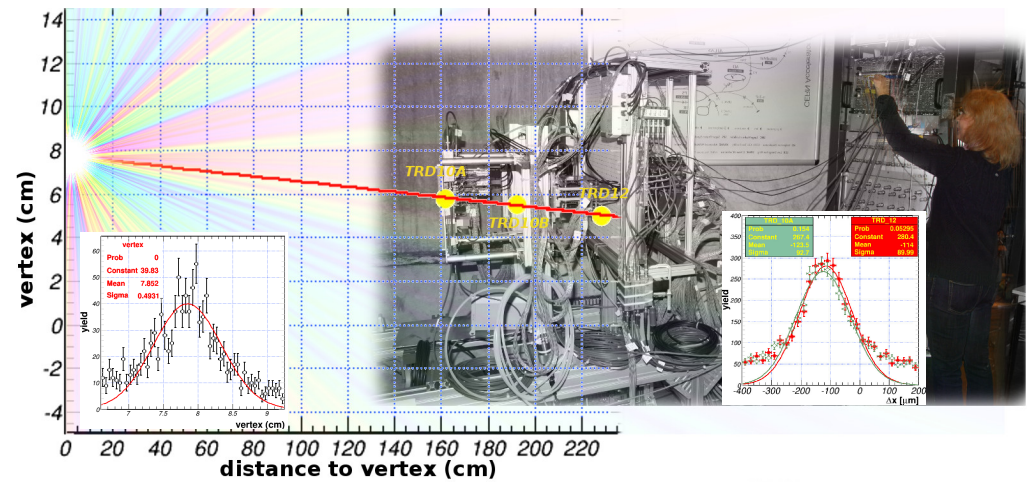
In-beam tests @ SPS, Nov.-Dec. 2015



$\delta t \sim 50\text{-}60$ psec

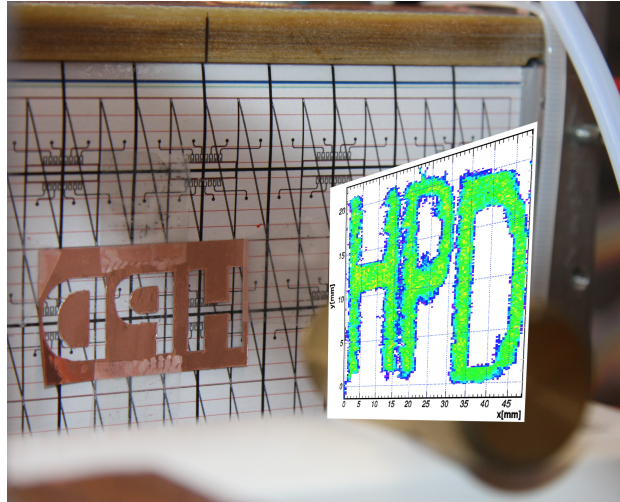
Cluster size $\sim 1.8\text{-}2$ strips

$\epsilon \geq 90\%$

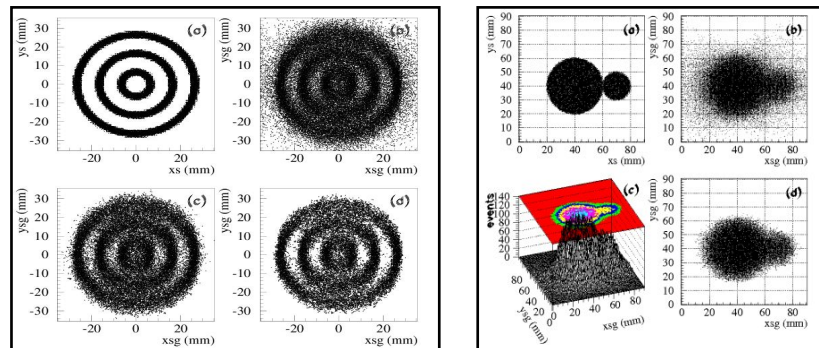


Input for \longrightarrow *Applied research* \longrightarrow *Technological transfer*

Application: high sensitivity whole-body PET imaging.



MC simulations based on the measured performance



$\epsilon_{MIP} > 95\%$

$\epsilon_{\gamma} \sim 2-3\%$

Some of the publications from inventing MGMSRPC architecture

- [1] *Multistrip, Multigap, Symetric RPC*
M. Petrovici
VI Workshop on Resistive Plate Chambers and Related Detectors, Coimbra, Portugal, 26-27 November, 2001
- [2] *Large - area glass-resistive plate chamber with multistrip readout*
M. Petrovici, N. Herrmann, K.D. Hildenbrand, G. Augustinski, M. Ciobanu, I. Cruceru, M. Duma, O. Hartmann, P. Koczon, T. Kress, M. Marquardt, D. Moisa, M. Petris, C. Schroeder, V. Simion, G. Stoicea, J. Weinert
Nuclear Instruments and Methods in Physics Research A 487(3):337-345, (Jul 21 2002)
- [3] *Multistrip Multigap Symmetric RPC*
M. Petrovici, N. Herrmann, K.D. Hildenbrand, G. Augustinski, M. Ciobanu, I. Cruceru, M. Duma, O. Hartmann, P. Koczon, T. Kress, M. Marquardt, D. Moisa, M. Petris, C. Schroeder, V. Simion, G. Stoicea, J. Weinert
Nuclear Instruments and Methods in Physics Research A 508 (1-2):75-78(Aug 2003)
- [4] *Time Resolution of Radiation Hard Resistive Plate Chambers for the CBM Experiment at FAIR*
D. Bartos, G. Caragheorgheopol, F. Dohrmann, K.D. Hildenbrand, B. Kampfer, R. Kotte, L. Naumann, M. Petris, M. Petrovici, V. Simion, M.C.S. Williams, J. Wustenfeld
IEEE Dresden 19-25 October 2008
- [5] *Strip Readout RPC Based on Low Resistivity Glass Electrodes*
M. Petris, M. Petrovici, V. Simion, D. Bartos, G. Caragheorgheopol, F. Dohrmann, K.D. Hildenbrand, B. Kaempfer, R. Kotte, L. Naumann, D. Stach, M.C.S. Williams, J. Wustenfeld
Rom. Journ. Phys. 56:349-358, 2011
- [6] *A Multi-strip Multi-gap RPC Barrel for Time-of-Flight Measurements*
M. Kis, M. Ciobanu, I. Deppner, K.D. Hildenbrand, N. Herrmann, T.I. Kang, Y.J. Kim, P. Koczon, Y. Leifels, M. Marquardt, M. Petrovici, K. Piasecki, M.S. Ryu, A. Scuttauf, V. Simion, J. Weinert, X. Zhang, Nucl. Instr. and Meth. in Phys. Res. A646(2011)27
- [7] *Toward a high granularity and high counting rate, differential readout timing MRPC*
M. Petris, M. Petrovici, V. Simion, D. Bartos, G. Caragheorgheopol, I. Deppner, K. Doroud, N. Herrmann, M. Kiss, P. Loizeau, Y. Zhang, M.C.S. Williams
Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol. 661, Suppl.1, 1 January 2012, S129-S133
- [8] *The CBM time-of-flight wall*
I. Deppner, N. Herrmann, D. Gonzalez-Diaz, V. Ammosov, J. Cheng, M. Ciobanu, V. Gapienko, K.D. Hildenbrand, A. Kiseleva, M. KiÅ, D. Kresan, R. Kotte, C. Huangshan, Y. Leifels, J. Fruehauf, C. Li, Y. Li, P.-A. Loizeau, L. Naumann, M. Petrovici, M. Petris, A. Semak, V. Simion, D. Stach, Y. Sun, Yu. Sviridov, Z. Tang, E. Usenko, J. Wang, Y. Wang, K. Wisniewski, J. Wustenfeld, L. Xu, V. Zaets, Y. Zhang, X. Zhu
Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol. 661, Suppl.1, 1 January 2012, S121-S124, 2012
- [9] *High counting rate, two-dimensional position sensitive timing RPC*
M. Petrovici, M. Petris et al. Journal of Instrumentation Volume 7 Nov. 2012 (JINST 7 P11003)
- [10] *Multi-Strip RPC for high counting rate experiment*
M. Petris and M. Petrovici, Journal of Physics: Conference Series, Volume 533, 012009, 2014
- [11] *The CBM Time-of-Flight wall — a conceptual design*
I. Deppner, N. Herrmann, A. Akindinov, D. Bartos, A. Balaceanu, S. Belogurov, P. Cao, G. Caragheorgheopol, H. Chen, J. Cheng, M. Ciobanu, F. Constantin, Z. Deng, H. Deppe, V. Duta, H. Fan, H. Flemming, J. Fruehauf, J. Gebelein, K. Heidel, K. Hildenbrand, U. Keschull, M. KiÅ, S. Kiselev, K. Koch, P. Koczon, R. Kotte, A. Laso Garcia, J. Lehrbach, C. Li, Y. Li, P.-A. Loizeau, P. Lv, D. Malkevich, S. Manz, L. Naumann, A. Nedosekin, W. Niebur, A. Oancea, M. Petris, M. Petrovici, V. Plotnikov, M. Prokudi, L. Radulescu, M. Shao, V. Simion, C. Simon, R. Sultanov, Y. Sun, Z. Tang, Y. Wang, J. Wustenfeld, C. Xiang, N. Xu, Y. Zhang, D. Zhou and X. Zhu
2014 JINST 9 C1001 2014
- [12] *Technical Design Report for the CBM Time-of-Flight System (TOF), CBM-TOF Collaboration, Report No.: GSI-2015-01999, 2015*
- [13] *Prototype with the basic architecture for the CBM-TOF inner wall tested in close to real conditions*
M. Petris, D. Bartos, G. Caragheorgheopol, F. Constantin, M. Petrovici, L. Radulescu, V. Simion, I. Deppner, N. Herrmann, C. Simon, J. Fruehauf, M. Kis, P.-A. Loizeau
Journal of Physics: Conference Series 724 (2016) 012037
- [14] *Time and position resolution of high granularity, high counting rate MRPC for the inner zone of the CBM-TOF wall*
M. Petris, D. Bartos, G. Caragheorgheopol, I. Deppner, J. Fruehauf, N. Herrmann, M. Kis, P.-A. Loizeau, M. Petrovici, L. Radulescu, V. Simion, C. Simon
Journal of Instrumentation, Volume 11, September 2016 (2016 JINST 11 C09009)
- [15] *A Method to Adjust the Impedance of the Signal Transmission Line in a Multi-Strip Multi-Gap Resistive Plate Counter*
D. Bartos, M. Petris, M. Petrovici, L. Radulescu, V. Simion
Romanian Journal of Physics 63, 901 (2018)
- [16] *In-beam test of the RPC architecture foreseen to be used for the CBM-TOF wall*
M. Petris, D. Bartos, L. Radulescu, V. Simion, I. Deppner, N. Herrmann, C. Simon, J. Fruehauf, M. Kiss, P. Loizeau
Journal of Physics: Conference Series, Vol. 1023(2018), 012007

1 patent

1 bronze medal at the International Salon of Inventions - Geneva

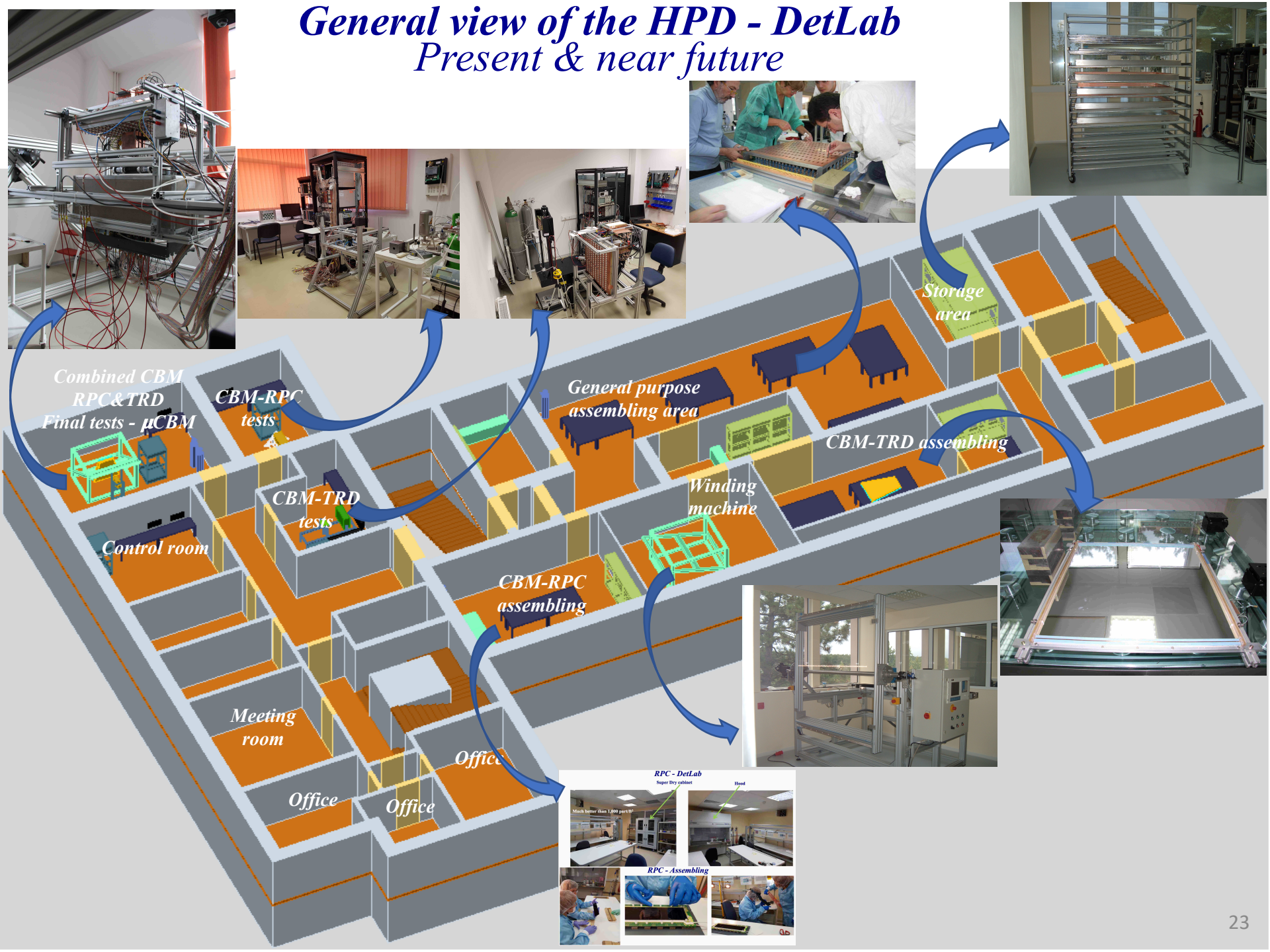
Some of the publications from inventing HCR-TRD architecture

- [1] *Development of a Two Dimensional Position Sensitive Transition Radiation Detector for High Counting Rate Experiments*
M. Petris, M. Petrovici, V. Catanescu
Nuclear Theory, Vol. 33 (2014), p.152, ISSN 1313-2822 (Proceedings of the 33-rd International Workshop on Nuclear Theory (IWNT-33), Rila Mountains 2014)
- [2] *TRD detector development for the CBM experiment*
M. Petriș, M. Petrovici, V. Cătănescu, M. Târziță, V. Simion, D. Bartoș, I. Berceanu, A. Bercuci, G. Caragheorghopol, F. Constantin, L. Rădulescu, J. Adamczewski-Musch, S. Linev
Nuclear Instruments and Methods in Physics Research A 732 (2013)375
- [3] *Two-dimensional position sensitive transition radiation detector*
M. Petriș, M. Petrovici, V. Cătănescu, V. Simion, D. Bartoș, I. Berceanu, A. Bercuci, G. Caragheorghopol, F. Constantin, M. Târziță, C. Bergmann, D. Emschermann, S. Linev, W.F.J. Müller, J.P. Wessels
Nuclear Instruments and Methods in Physics Research Section A714(2013)
- [4] *A Two-Dimension Position Sensitive High Efficiency Transition Radiation Detector for High Counting Rate Environment*
M. Petrovici, V. Simion, M. Petris, V. Aprodu, D. Bartos, G. Caragheorghopol, V. Catanescu, A. Herghelegiu, L. Prodan, A. Radu, C. Bergmann, M. Klein-Boesing, J. P. Wessels
Rom. Journ. Phys. 56(2011)654
- [5] *Rate Capability of a High Efficiency Transition Radiation Detector*
M. Petris, M. Petrovici, D. Bartos, I. Berceanu, V. Simion, A. Radu, A. Andronic, C. Garabatos, M. Klein-Boesing, R. Simon, F. Uhlig, J.P. Wessels, A. Wilk
Rom. Journ. Phys., 55(2010)324
- [6] *Position resolution of a high efficiency Transition Radiation Detector for high counting rate environment*
M. Klein-Boesing, A. Andronic, D. Bartos, I. Berceanu, V. Catanescu, C. Garabatos, N. Heine, A. Herghelegiu, C. Magureanu, D. Moisa, M. Petris, M. Petrovici, A. Radu, V. Simion, F. Uhlig, J.P. Wessels, A. Wilk
Nuclear Instruments and Methods in Physics Research A 585(2008)83
- [7] *A high-efficiency Transition Radiation Detector for high-counting-rate environments*
M. Petrovici, M. Petris, I. Berceanu, V. Simion, D. Bartos, V. Catanescu, A. Herghelegiu, C. Magureanu, D. Moisa, A. Radu, M. Klein-Boesing, J.P. Wessels, A. Wilk, A. Andronic, C. Garabatos, R. Simon, F. Uhlig
Nuclear Instruments and Methods in Physics Research A579(2007)961
- [8] *High counting rate transition radiation detector*
M. Petris, M. Petrovici, V. Simion, I. Berceanu, D. Moisa
Nuclear Instruments and Methods in Physics research A581(2007)406

1 patent

1 silver medal at the International Salon of Inventions - Geneva

General view of the HPD - DetLab Present & near future



Combined CBM
RPC&TRD
Final tests - μ CBM

CBM-RPC
tests

CBM-TRD
tests

Control room

Meeting
room

Office

Office

General purpose
assembling area

Winding
machine

CBM-RPC
assembling

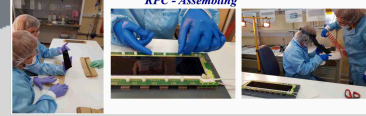
CBM-TRD assembling

Storage
area

RPC - DetLab
Support by cabinet



RPC - Assembling



ALICE-related international events

Organized by us in Romania

International Workshop

«Transition Radiation Detectors – Present & Future»

ALICE & CBM Collaborations



TOPICS:
ALICE-TRD • ATLAS-TRT
High Counting Rate CBM-TRD
Physics and trigger potentiality



INTERNATIONAL ORGANIZING COMMITTEE

Peter Braun-Munzinger
Carlo Guarelda
Mihai Petrovici
Jurgen Schukraft
Peter Senger
Johanna Stachel
Johannes Wessels



Cheile Grădiștei, ROMANIA
September 24-28, 2005

LOCAL ORGANIZING COMMITTEE

Cristina Aifimiei
Aurora Antoișie
Andrei Cristian
Alexandra Olteanu
Mariana Petriș
Amalia Pop
Oana Radu

SPONSORS

ROMANIAN MINISTRY OF EDUCATION AND RESEARCH
NATIONAL INSTITUTE FOR PHYSICS AND NUCLEAR ENGINEERING
UNIVERSITY OF HEIDELBERG
GESELLSCHAFT FÜR SCHWERIONENFORSCHUNG DARMSTADT

<http://dracula.nipne.ro/cmsimple2-4>

Workshop

International

GRID Activities within Large Scale International Collaborations

International Advisory Committee:

Paul Avery (U. Florida)	V.V. Ivanov (UNR, Delft)
Nick Brook (CERN)	Peter Jenni (CERN)
Rene Brun (CERN)	Massimo Lamanna (CERN)
Federico Carniani (CERN)	Isid Legrand (CATECH)
Greg Cole (JICS, ORNL)	Tatsuya Nakada (CERN)
Les Cottrell (SLAC, Stanford)	Harvey Newman (CALTECH)
Ulrik Egede (Imperial College, London)	Sergiy Novosel (IHEP, Sib. Branch)
David Foster (CERN)	Gilbert Poulard (CERN)
Vitalchev Ilyin (SNP, Moscow)	Jurgen Schukraft (CERN)

Speakers:

Cristina Aifimiei	Isid Legrand
Edvard Andree	Frank van Lingen
Nick Brook	Fairoz Mahk
Rene Brun	Peter Mery
Federico Carniani	Catalin Nae
Philippe Charpentier	Gabriel Neegre
Joel Closer	Harvey Newman
Greg Cole	Andreas Pflaier
Sorban Constantinescu	Rubin Pridler
Catalin Carbotu	Gilbert Poulard
Philippe Charpentier	Tus Prada
Les Cottrell	Orjane Prist
Mirela Dulea	Octavian Rutu
Ulrik Egede	Pablo Sala
Cristoforo Eoli	Alberto Santoro
Ricardo Giacinti-Diaz	Claudio Schiava
V.V. Ivanov	Klaus Schwab
Mihai Joleanu	Radu Stolica
Gigi Karmous-Edwards	Nicolae Teyssie
Felix Karayannis	Andrei Tesaregorodtzev
V.V. Korotkiy	Grigore Valentin
Massimo Lamanna	P. V. Zolov


Organized by:
National Institute of Physics and Nuclear Engineering
Bucharest, ROMANIA

Local Organizing Committee:
Cristina Aifimiei, Florin Galicea, Sorban Constantinescu, Mirela Dulea, Mihai Petrovici, Amalia Pop, Tus Prada, Claudio Schiava, Adrian Socolov, Sabina Stolica, Nicodan V. Ziarciu, Sorin Zgura

Technical Board:
Alexandru Olteanu, Aurora Antoișie

Sponsored by:
National Authority for Scientific Research

Grid Applications for HEP
Grid Applications for other domains
Status of Grid developments at LHC
LHC project
Grid Networking



Sinaia, Romania
13 – 18 October 2006
<http://niham.nipne.ro/events2006>

ALICE Workshop

20–24 August 2008
Sibiu, Romania

Topics:

- TRD
Chamber production status
Supermodules production
Commissioning
Reconstruction
PID capabilities
- Offline Software and GRID activities
ALICE computing
ALICE distributed computing – AllEn Monitoring
ROOT: current developments, roadmap & impossible wishes
Proof and AllEn tutorials
- Physics
ALICE @ LHC
Heavy Ion Program @ ATLAS and CMS
Collective flow
Heavy flavor physics
First physics

Organizing Committee

F. Antinori
P. Braun–Münzinger
R. Brun
F. Carminati
Ch. Kuhn
G. Martinez
A. Morsch
M. Petrovici
L. Ramello
J.P. Revol
K. Safarik
J. Schukraft
Y. Schutz
J. Wessels

Local Organizing Committee

C. Andrei
M.D. Cozma
A. Herghelegiu
C. Schiava

Sponsors

ANCS
CNMP
IFIN-HH
CERN
BMFB
GSI

<http://niham.nipne.ro/aliceworkshop08>



CBM-related international events

Organized by us in Romania

16th CBM Collaboration Meeting

27 September – 1 October 2010

Mamaia, Romania

Topics

R&D, Monte Carlo Simulations:

Electromagnetic Calorimeter
Micro-Vertex Detector
Muon Chambers
Resistive Plate Chambers
Ring Imaging Cherenkov Detector
Silicon Tracking Detector
Spectator Detector
Transition Radiation Detector

Physics:

Equation of State
Phase Transitions
Critical Point

Front-End Electronics

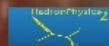
Data Acquisition, Fast Online Event Selection

Online and Offline Software, Computing Model

Organizing Committee:

Dan Cozma
Jürgen Eschke
Volker Friese
Walter F.J. Müller
Mihai Petrovici
Peter Senger

Sponsors:



<http://niham.nipne.ro/cbm2010>



Training & teaching

A three weeks experience in the "crazy" world of scientific research ...

Exploring the world of research

Authors: **Mihai PUSCAS,**
Cristi SCHIRIAC,
Filip PUICEA,
Dorin CONONENCO

Exploring the world of research

IFIN-HH **DFH**

Second edition

Hadron Physics internship

2012

xv 3.10a(PNG): students/layout_1.png <unregistered>

Reconstruction

TRD (Transition Radiation Detector)

RPC (Resistive Plate Chamber)

Hadrons

"The masterminds behind hadronics"

MBS (Master Branch System)

ALICE experiment

IFIN-HH

A few weeks in the world of research

Would you like to contribute to understand the secrets of the Universe?

High Energy Physics
Nuclear Astrophysics
Particle Detection Systems
Front-End Electronics & IT

Join us for the:

Summer Student Program 2017

Organized by: **Hadron Physics Department**
Horia Hulubei National Institute of Physics and Nuclear Engineering

Contact: 0040-21-4046135, mpetro@niham.nipne.ro
For further information visit the Training / Summer Student Program at <http://niham.nipne.ro>

They are the main actors !



*“Leadership and management must go hand in hand.
They are not the same thing.
But they are necessarily linked, and complementary.
Any effort to separate the two is likely to cause more problems
than it solves.”*

*“The manager’s job is to plan, organize and coordinate.
The leader’s job is to inspire and motivate.”*

“The Wall Street Journal Guide to Management” by Alan Murray

Thank you !

<https://niham.nipne.ro>

<https://www.youtube.com/watch?v=OJd4fA0xUh0>

<https://www.facebook.com/Hadron-Physics-Department-211078852968333/>

<https://www.youtube.com/watch?v=ZHBgGKamUc8&feature=youtu.be>

https://niham.nipne.ro/Booklet_14.html

https://niham.nipne.ro/ALICE_c.html

https://niham.nipne.ro/CBM_c.html

https://niham.nipne.ro/DFH_c.html