Decisions of the regular (March 2010) and extraordinary (May 2010) sessions of the Committee of Plenipotentiaries of the Governments of the JINR Member States.

JINR in 2010: a brief overview of main results.

M. Itkis

108th SESSION of the JINR SCIENTIFIC COUNCIL
23–24 September 2010

CONTENTS

I. Introduction

II. March 2010: Regular session of the JINR Committee of Plenipotentiaries of the Governments of the Member States.
Brief review of the main experimental and theoretical results in 2010.

I. May 2010: Extraordinary session of the JINR Committee of Plenipotentiaries

II. Conclusion

INTRODUCTION: JINR's Science Policy

http://wwwnew.jinr.ru/7yearplan/Seven_Year_Plan-rus_fin.pdf

http://wwwinfo.jinr.ru/Road_Map_2008-2017.htm

Fundamental Science

Innovative activities

Education programme

JOINT INSTITUTE FOR NUCLEAR RESEARCH
JINR

Special Economic Zone
Public-Private-Partnership

UC, DIAS-TH
International Univ. "Dubna"

March 2010: Regular session of the JINR Committee of Plenipotentiaries

The session was chaired by the Plenipotentiary of the Government of the Slovak Republic to JINR Prof. S. Dubnička.

March 2010: Regular session of the JINR Committee of Plenipotentiaries

A comprehensive presentation devoted to the major results of JINR's activities in 2003–2009 and prospects for the development of JINR in 2010–2016 was done by Alexey Sissakian.

GENERAL DECISIONS of CP:

- To appreciate highly the results of JINR's activity in 2003–2009
- To appreciate highly the successful implementation of the Scientific Council's recommendations concerning the scientific programme of JINR, the upgrade of the basic facilities, and the construction of the new facility IREN.

From the resolution of the Committee of Plenipotentiaries (March 2010):

- To appreciate the significant progress in upgrading the Nuclotron-M/NICA accelerator complex and to note that during the 40th and 41st runs of the Nuclotron-M (2009–2010) the physics research programme was fulfilled completely and stable operation of the accelerator complex at high intensity was demonstrated.

- To take note of the information on the first experience of JINR physicists in data taking in the LHC experiments (ATLAS, ALICE, and CMS) and to congratulate the JINR teams for having fulfilled their obligations in the construction of the detectors and the commissioning phase. To note the important contribution of JINR staff members to the first data analysis phase.

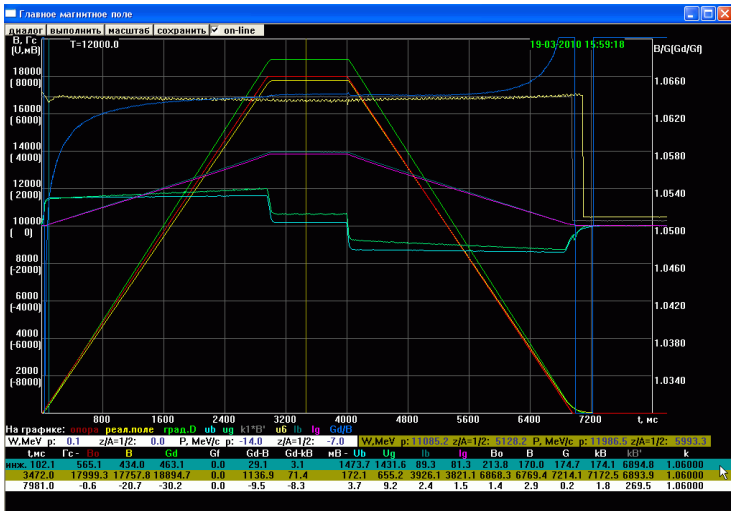
Nuclotron-M: Main results of the 41st run: 25 Feb. - 25 March 2010

For the first time at Nuclotron!

Generated and accelerated ions with Z/A ratio ~1/3:

C (A=12, Z=4), and A>100 **Xe (A=124, Z=42)**

Xe beam was accelerated up to 570 MeV/u & 1 GeV/u



Main magnetic field of the Nuclotron was increased up to 1.8 T

Next stage – field will be increased up to 1.9 - 2T (by the end of 2010 after full-scale commissioning of the new power supply system)

Upgrade of the cryogenic supply system towards NICA. Additional screw compressor for helium (6000m^3/h) from HELIIMASH (~1MEuro).

NICA main objectives in 2010

TASKS	Collaborators	Status (Sept 2010)
1. Elaboration of Collider TDR (to be finished by the end of 2010)	BINP, FNAL, CERN, GSI, ITEP,	In progress
2. Technical project of civil engineering of the collider layout (we expect GlavGosExpertise at the beginning of 2011)	GSPI	In progress
3. Heavy Ion LINAC TDR	IHEP (Protvino), BINP/Sarov	Negotiations
4. Prototypes of the dipole magnets for NICA Booster and NICA Collider	Machinery plant "ATOM"	In progress
5. Booster RF system	BINP, Novosibirsk	Contract
6. New cryo-magnetic factory (manufacturing, assembling, cryo and vacuum tests) for SC magnets for NICA and FAIR	Industrial companies GSI/FAIR	Civil works in progress
7. MAC meeting	04-05 Oct.'10	

International conference "Critical Point and Onset of Deconfinement" 23-29 August 2010, JINR, Dubna

JINR Vice-Director R.Lednicky

LHEP Director V.Kekelidze

Workshop Chairman A.Sorin

CPOD scientific secretary D.Blaschke

Partnership Programmes in Particle Physics

From the resolution of the Committee of Plenipotentiaries (March 2010):

"To appreciate highly the new efforts of the Directorate towards development of the JINR partnership programmes with research centres of the Member States and other countries as well as with international scientific research organizations".

Partnership Programmes in Particle Physics

ICA-RU-0111

CO-OPERATION AGREEMENT

between

THE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN)

and

THE JOINT INSTITUTE FOR NUCLEAR RESEARCH (JINR)

concerning

Scientific and Technical Co-operation in High-Energy Physics

2010

Done at Geneva on 28 January 2010, in two copies in the English language.

For the European Organization for Nuclear Research (CERN)	For the Joint Institute for Nuclear Research (JINR)
Prof. Rolf-Dieter Heuer	Prof. Alexei N. Sissakian

28 January 2010, CERN

3.2 Possible projects at the date of this Agreement include:

- the commissioning and operation of the Large Hadron Collider ("LHC") at CERN, including the ALICE, ATLAS and CMS experiments using the LHC;
- upgrades of the Nuclotron and the construction, commissioning and operation of the NICA collider project at JINR, including the MPD and SPD experiments using NICA;
- upgrades of the LHC injector chain, including the Linac4, SPL and PS2 projects;

In July 2010, JINR and CERN signed an Addendum to this Agreement regarding a specialized JINR administrative support at CERN for the execution of the several tasks mentioned in this document.

RUSSIA, 2010

Agreements with the Budker Institute of Nuclear Physics (SB RAS) (18.02.2010) and National Research Nuclear University "MEPHI" (22.03.2010)

СОГЛАШЕНИЕ

о сотрудничестве между Объединенным институтом ядерных исследований и Институтом ядерной физики имени Г.И.Будкера СО РАН

г. Дубна «18» февраля 2010 г.

Объединенный институт ядерных исследований (ОИЯИ), в лице директора Института академика А.Н.Сисакяна, действующего на основании Устава, и Учреждение Российской Академии Наук Институт ядерной физики имени Г.И.Будкера Сибирского отделения РАН (ИЯФ), в лице директора Института академика А.Н.Скринского, действующего на основании Устава, именуемые в дальнейшем «Стороны»,

признавая важность объединения усилий для создания новых и поддержки существующих крупных физических экспериментальных установок, а также для проведения совместных исследований с их использованием;

стремясь к концентрации совместного потенциала для эффективного развития инновационной деятельности в области ускорителей заряженных частиц, пучковых, детекторных и смежных технологий;

понимая необходимость сохранения и развития традиций научно-исследовательской деятельности в нашей стране;

развивая и укрепляя международное сотрудничество в сфере общих интересов;

и учитывая, что обмен опытом и информацией имеет большое значение для обеих Сторон;

согласились о нижеследующем:

Директор Объединенного института ядерных исследований академик

А.Н.Сисакян

Директор Института ядерной физики им. Г.И. Будкера СО РАН академик

А.Н.Скринский

Partnership Programmes in Particle Physics

GERMANY:

- a partnership contract on joint JINR-GSI cooperation (signed in 2008);
- protocol between JINR and GSI on accelerator physics and technique (signed in 2010).

USA:

Partnership accords with FNAL and BNL were signed in March 2010.

For
Fermi National Accelerator Laboratory
Batavia, Illinois, USA

3/5/2010
P. Oddone, Director — Date

For
Joint Institute for Nuclear Research
Dubna, Russian Federation

5/31/2010
A. Sissakian, Director — Date

Agreed upon this the 2 day of MARCH 2010 at BNL in Upton, New York, U.S.A.

Alexey Sissakian
Director, JINR

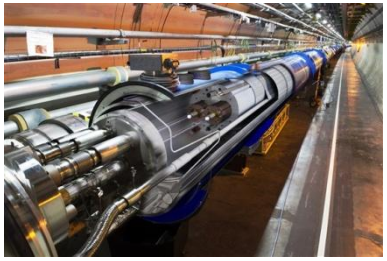
Samuel Aronson
Director, BNL

Partnership agreements should serve mutually beneficial cooperation of both sides in scientific programmes of each other

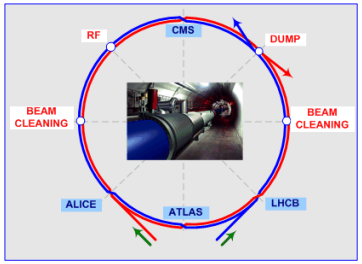
Four high sensitive drift chambers of the NA48 detector were delivered to Dubna. They have operated on the extracted SPS beam since 2000. The characteristics and dimensions of these chambers exactly fit the MPD detector for the NICA collider.

JINR Directorate expresses its deep gratitude to CERN Director-General Rolf Heuer!

External Activities in Particle Physics



LHC

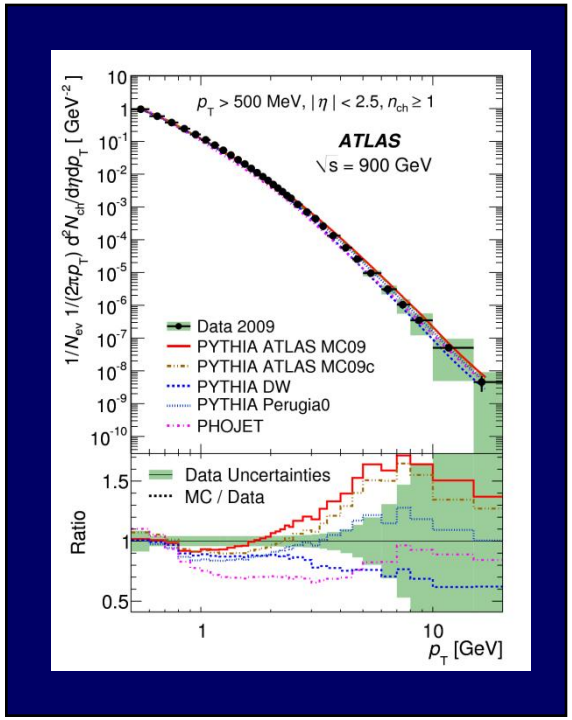


November 2009: the first LHC collisions @ LHC injection energy (900 GeV)
=> delivered/recorded ~15 μb-1/10μb-1
December 2009: the first LHC collisions @ 2.36 TeV
=> delivered/recorded 1.2 μb-1/0.4 μb-1
March 2010: the first LHC collisions @ 7 TeV (3.5 TeV + 3.5 TeV)
=> March 2010 – continues

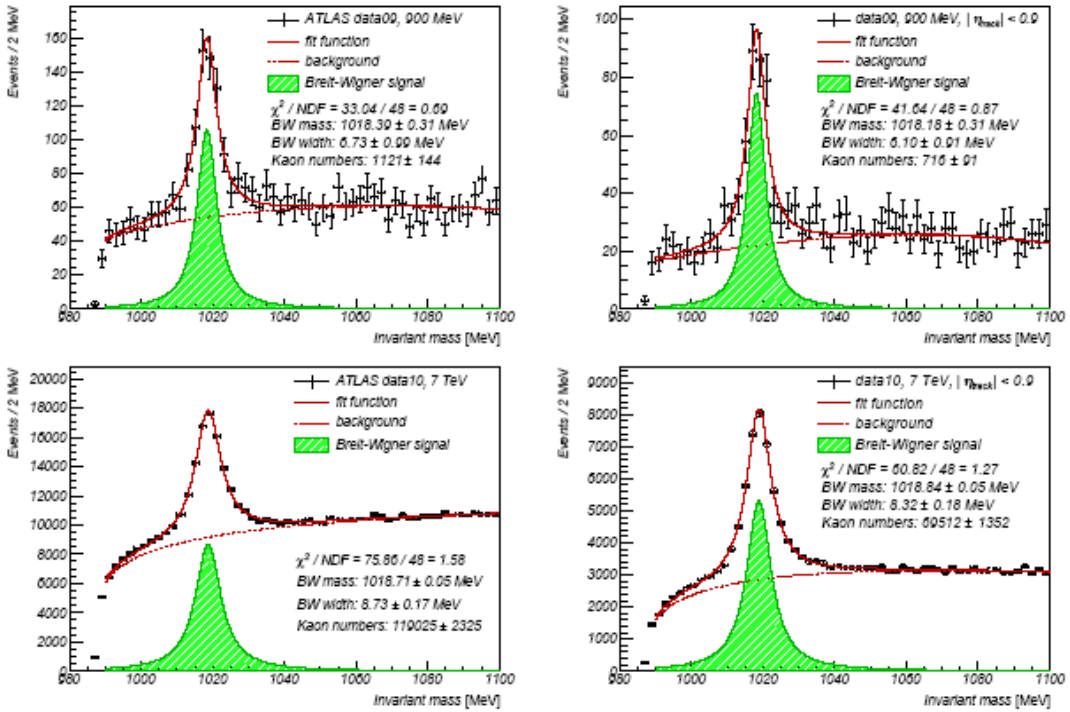
LHC nearest aims:

$L = 10^{32}$ $cm^{-2}c^{-1}$ by the end of 2010 + Heavy Ion Run in Dec.

LHC: JINR participation in the ATLAS experiment



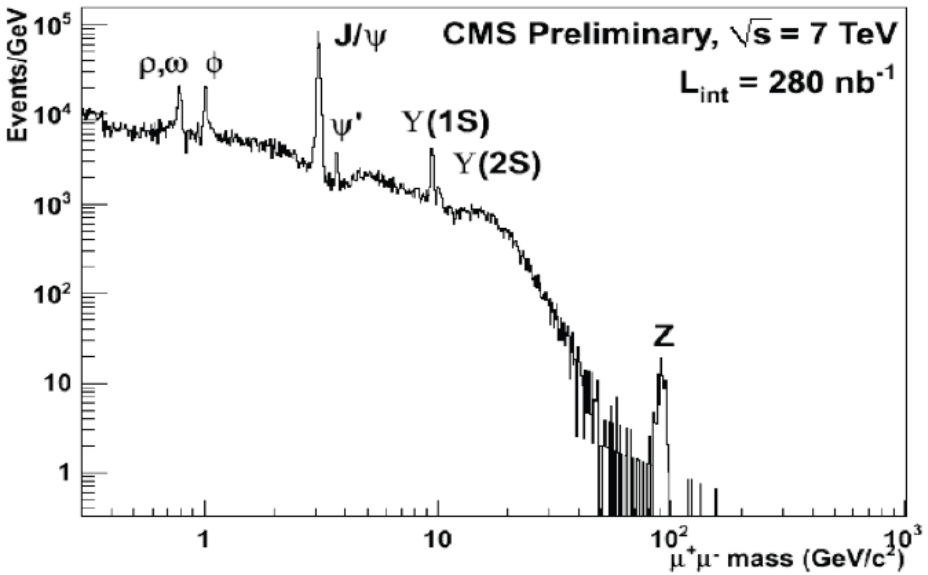
Charged-particle multiplicities in pp interactions at sqrt(s) = 900 GeV



Among the first JINR physics results is Φ-meson observation

JINR uses ATLAS grid at LIT CCIC!

LHC: JINR participation in the CMS experiment



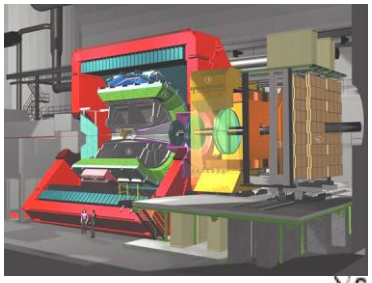
In 2010 Standard Model was re-discovered for some particles @ 7 TeV ⇒

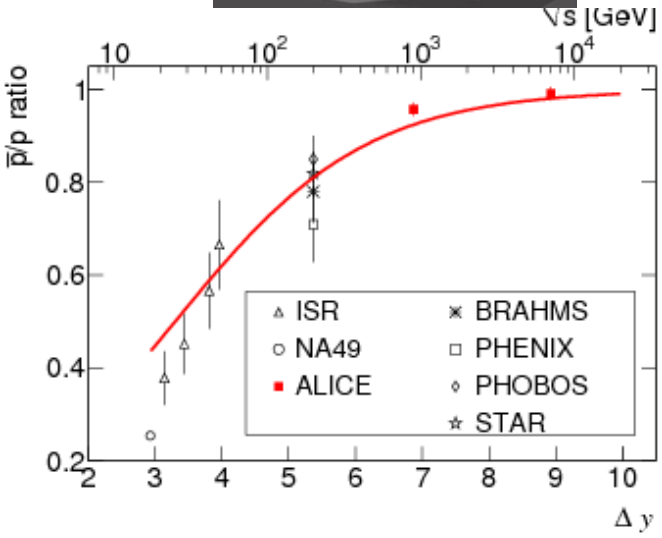
- **measurements of muons and jets: good agreement of Data and MC**
- **particle identification: pions, hyperons, J/ψ, Υ, W, Z**

Good reconstruction performance of CMS software was shown

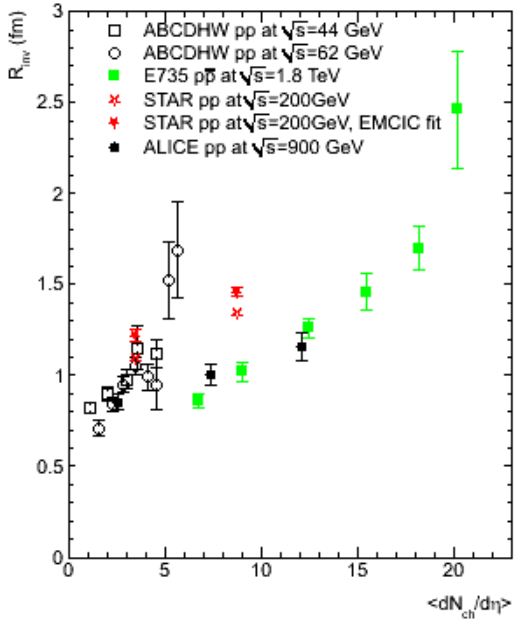
CMS Results were published and discussed in 5 papers, over 60 CMS Physics Analysis papers, 12 CMS ICHEP reports.

LHC: JINR participation in the ALICE experiment



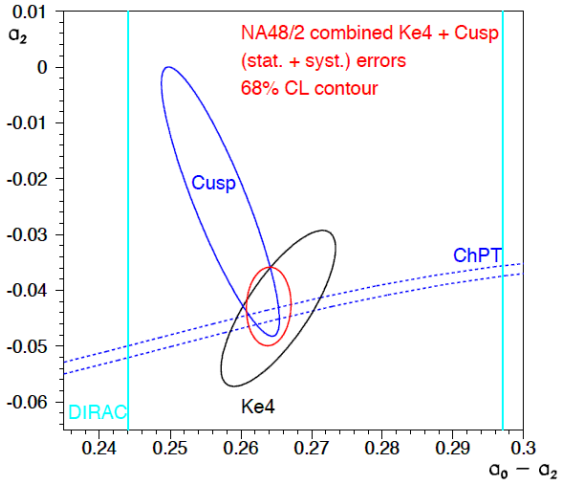


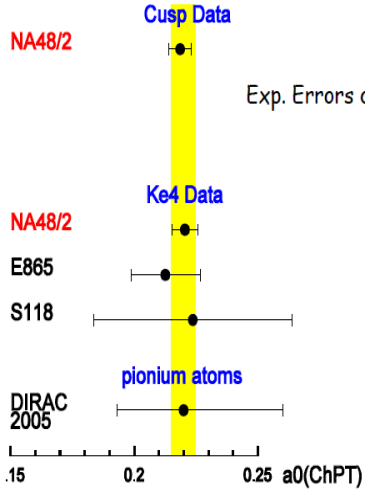
Antiproton/proton ratio vs rapidity (red points). Result is consistent with the Standard Model of baryon number transport.

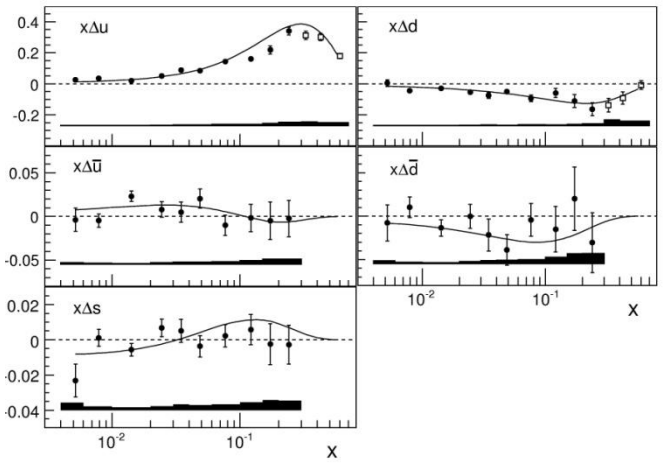


One-dimensional Gaussian correlation radius as a function of charged particle multiplicity at midrapidity for ALICE (red points) and other experiments. The results show that the radius increases with event multiplicity.

Fix-target experiments at CERN (NA48, COMPASS, NA61)







$$
\begin{aligned}
a_0 &= 0.2210 \pm 0.0047_{\text{stat}} \pm 0.0040_{\text{syst}} \\
a_2 &= -0.0429 \pm 0.0044_{\text{stat}} \pm 0.0028_{\text{syst}} \\
a_0 - a_2 &= 0.2639 \pm 0.0020_{\text{stat}} \pm 0.0015_{\text{syst}}
\end{aligned}
$$

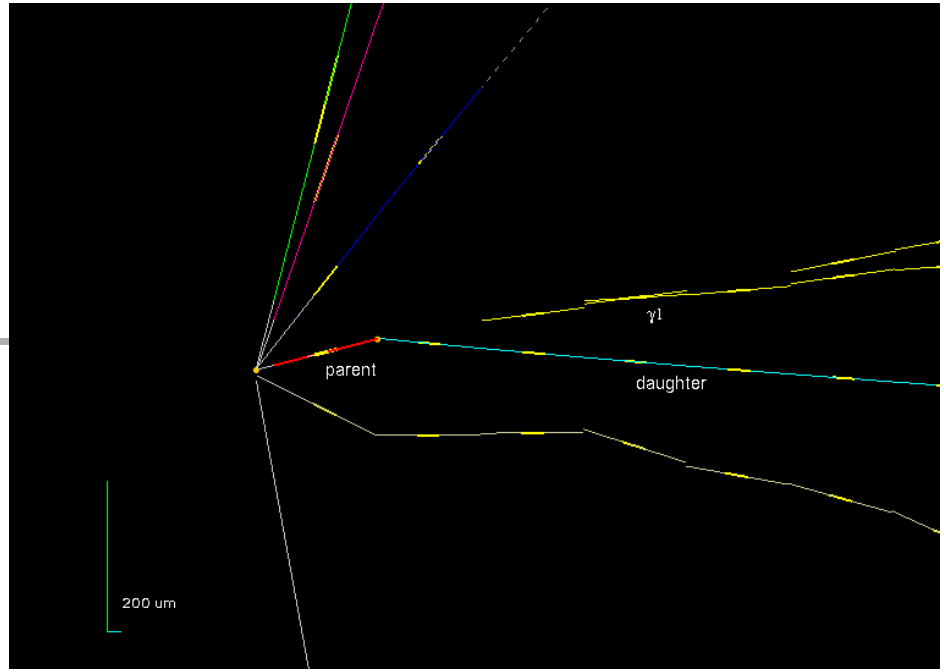
Quark helicity distributions from longitudinal spin asymmetries in muon-proton and muon-deuteron scattering

p+C interaction at 31 GeV/c for T2K experiment in Japan (~12M events)
p+p at 13 GeV/c (0.7M events) & 158 GeV/c (data taking in progress)

Neutrino physics

OPERA experiment

Observation of the first ν_τ candidate event in the OPERA experiment



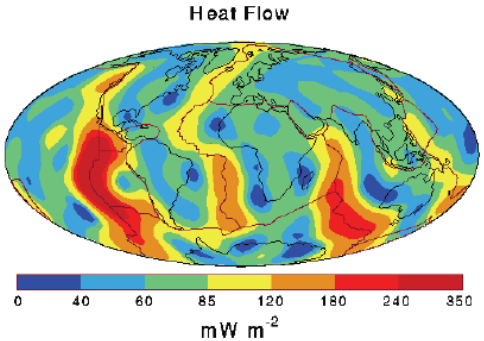
- **The first candidate of ν_τ event was registered recently ($\tau \rightarrow$ 1-prong hadron decay topology)**
- **By considering the 1-prong hadron channel only, the probability to observe 1 event due to a background fluctuation is 1.8%, for statistical significance of 2.36 σ on the measurement of the first ν_τ candidate event.**
- **This result is an important step towards the long expected discovery of neutrino oscillations in direct appearance mode.**
- **To finally meet this goal OPERA must successfully complete data taking in the CNGS beam and perform the analysis of the full data sample in next 3-4 years.**

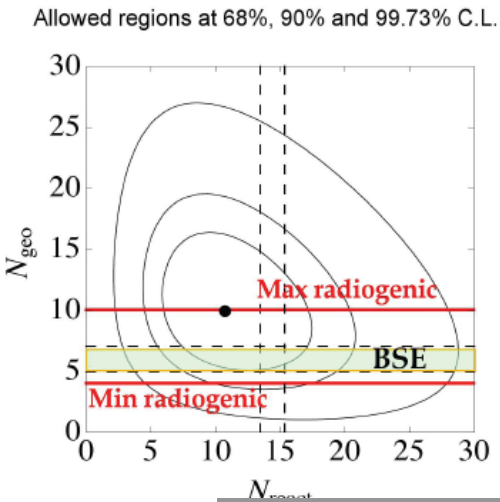
Neutrino physics

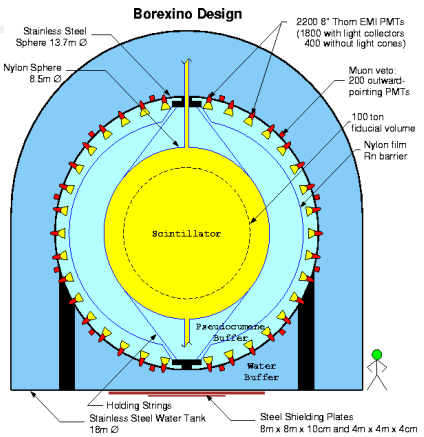
BOREXINO experiment:

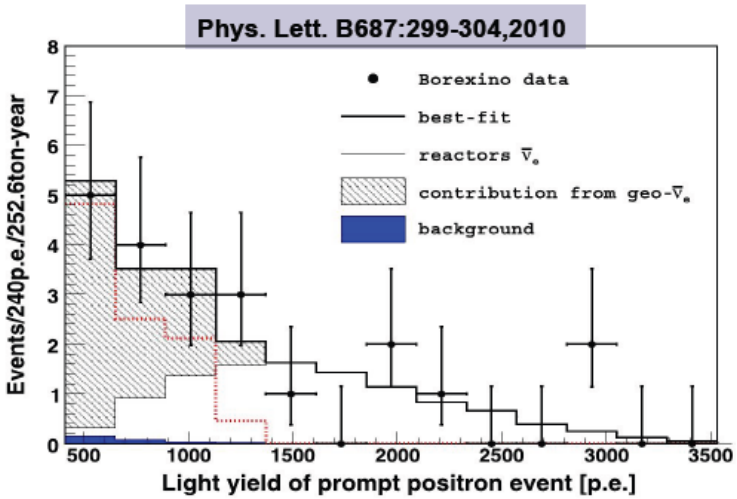
Solar neutrino flux measurement

Detection of geoneutrinos with Borexino









$$N_{geo} = 9.9^{+4.1}_{-3.4}$$

$$N_{react} = 10.7^{+4.3}_{-3.4}$$

Null hypothesis rejected at 99.997% C.L.

20 physicists from JINR took part in the Conference!

ICHEP 2010
July 22-28, Paris

"Basic research does not focus on concrete applications, but a country that fails to give it priority is making a historic blunder. The scientific edifice must be comprehensive: there can be no applications without basic research or breakthroughs without its results…"

N.Sarkozy

From the resolution of the Committee of Plenipotentiaries (March 2010):

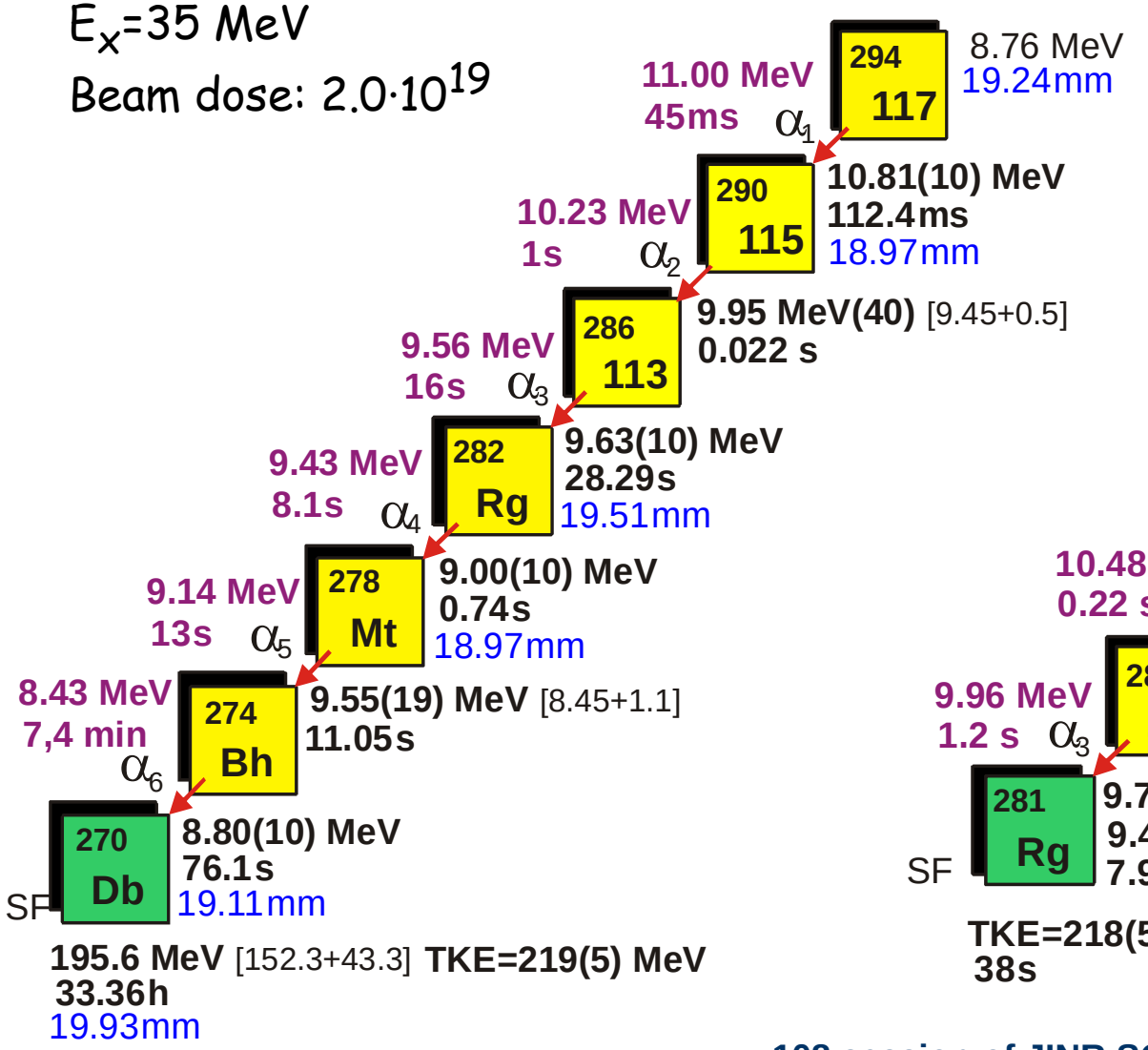
To note the significant progress achieved in the modernization of the DRIBs cyclotron complex in 2009.

To note the results produced in 2009 in the experiment on the synthesis of element 117 and to congratulate the staff of the Flerov Laboratory on the discovery of this element.

Synthesis of element 117 in the reaction $^{48}Ca+^{249}Bk$

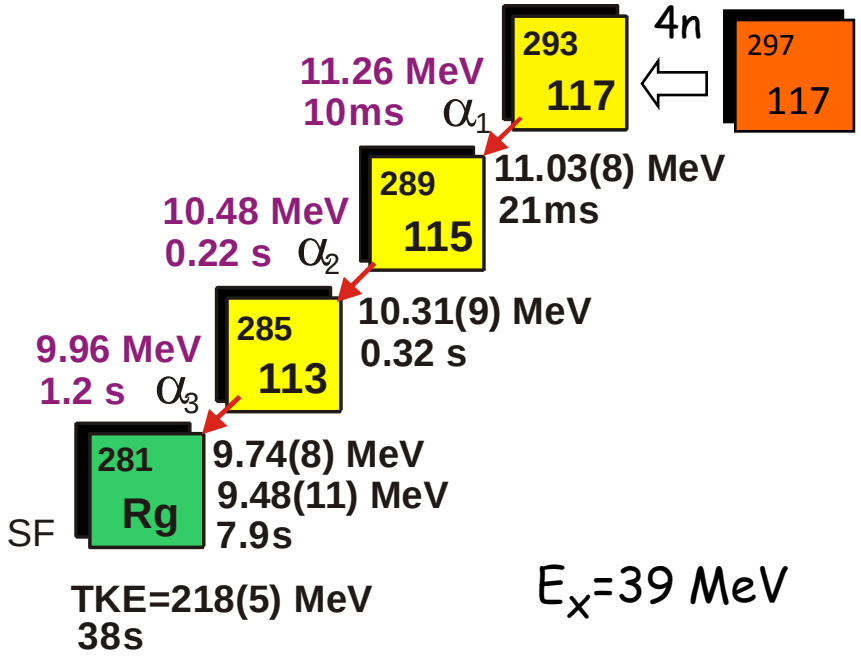
#6 str.#5, $B\rho$=2.42 Tm
22:57 Nov.22, 2009

E_x=35 MeV
Beam dose: $2.0 \cdot 10^{19}$



PHYSICAL REVIEW LETTERS,
V. 104, N14 (2010)

Synthesis of a new element with atomic number Z=117
Yu.Ts. Oganessian et al.

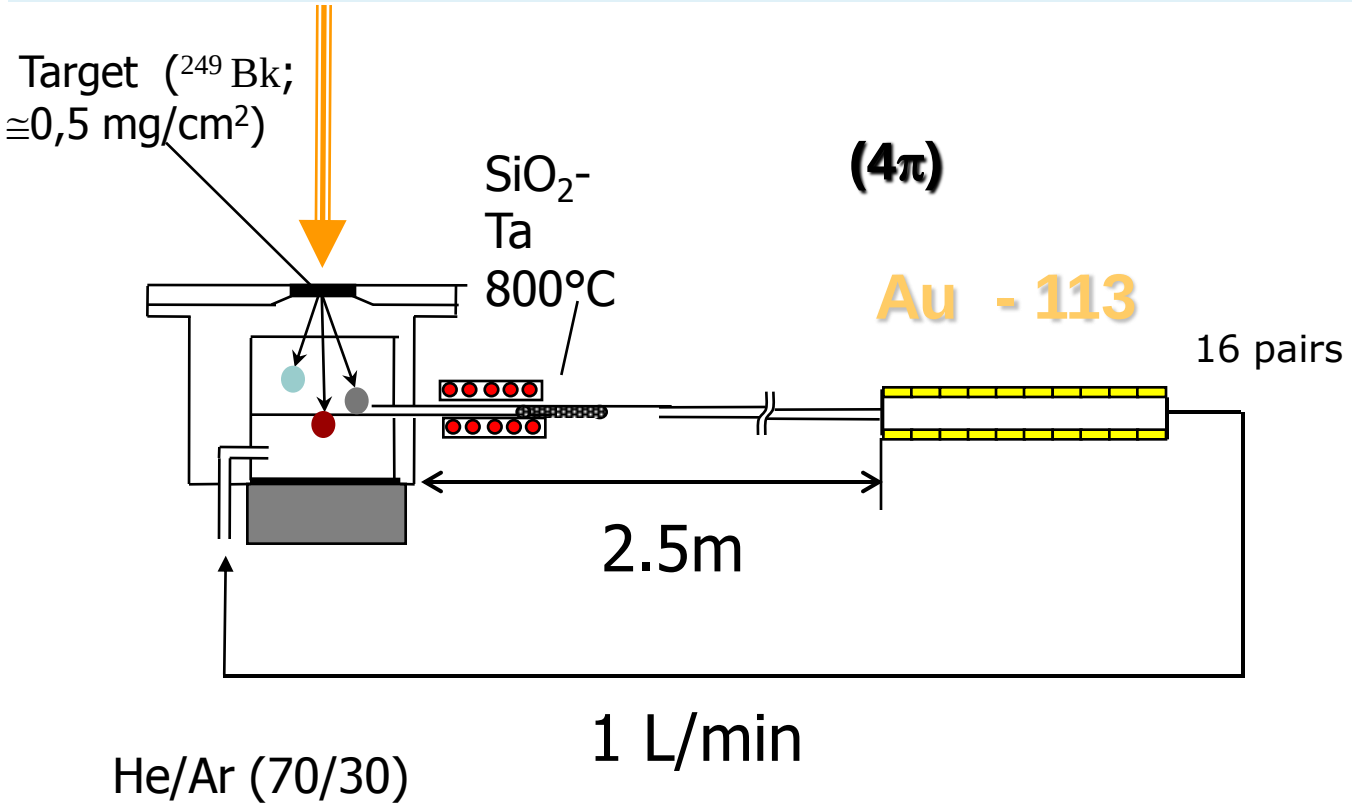


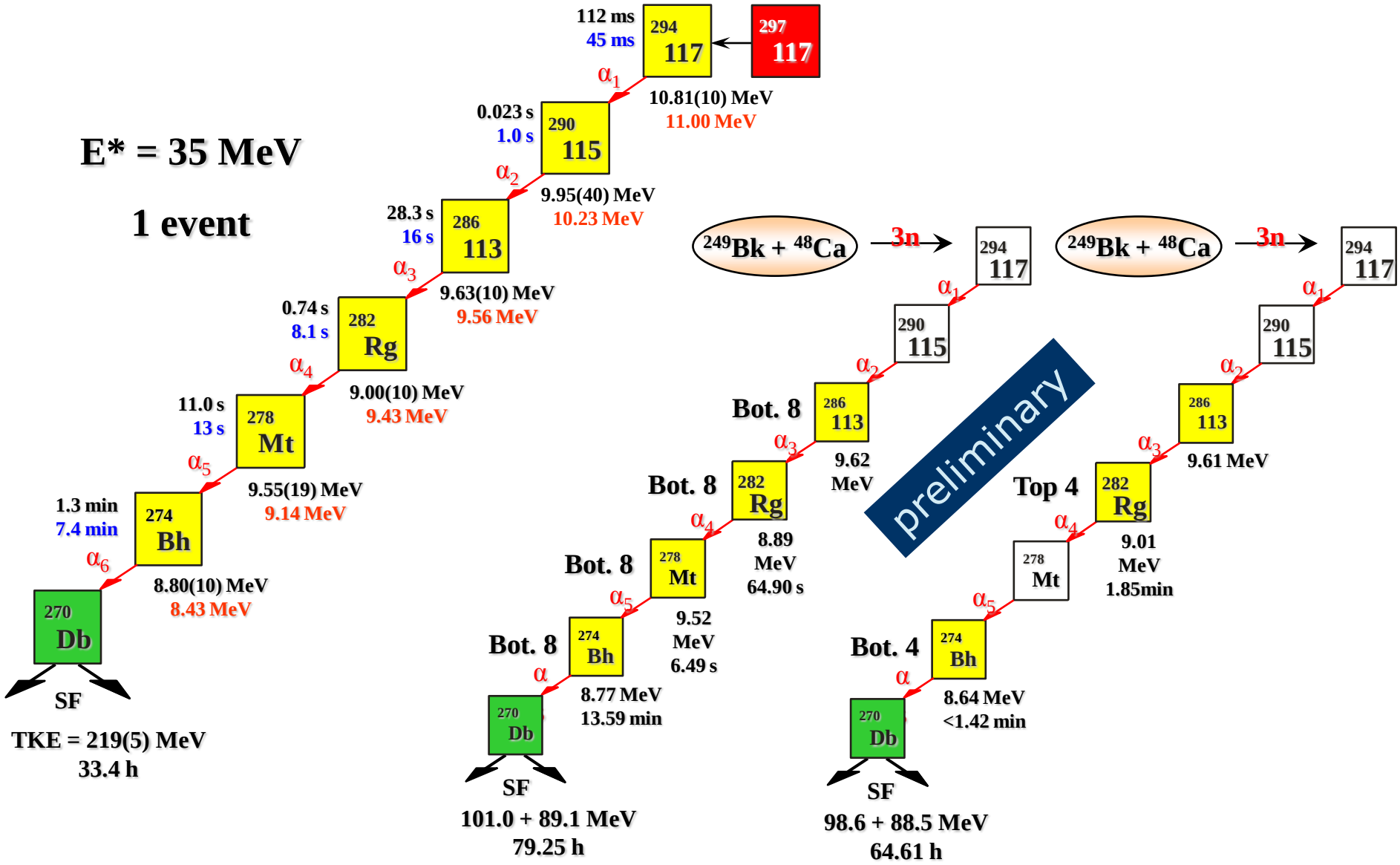
E_x=39 MeV

CHEMISTRY OF THE 113 ELEMENT

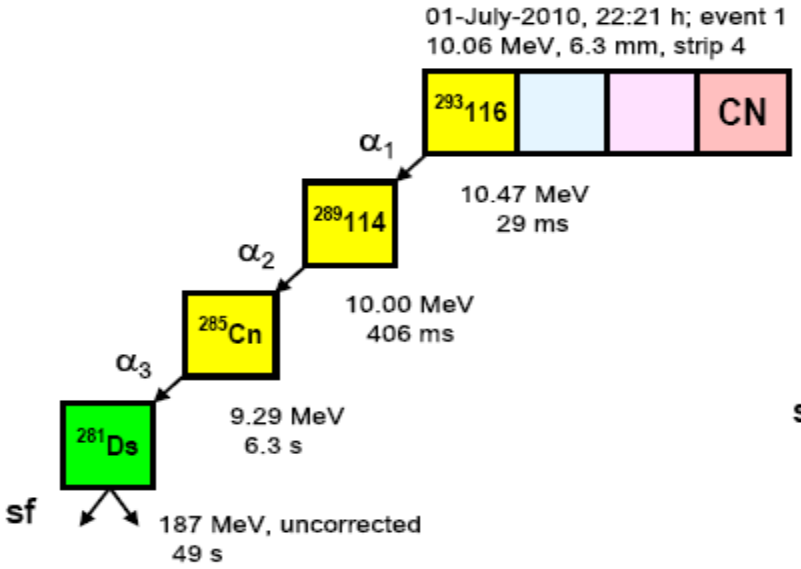
$^{48}Ca + ^{249}Bk$

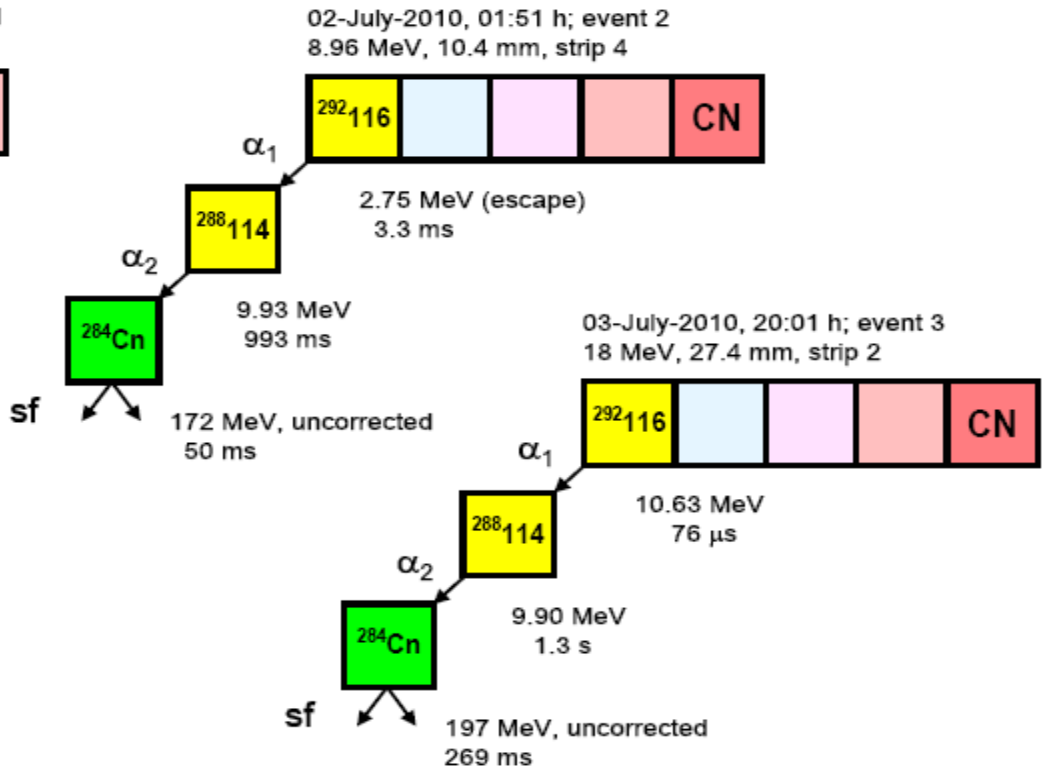
Target	**249Bk (0.5 mg·cm^{-2}), ^{nat}Nd (30 μg·cm^{-2})**
48Ca	**$E_{mid.\ target}$ = 252 MeV ; I ~ 9 eμA**
Irradiation	**18.04.2010 - 31.05.2010 : $9.1 \cdot 10^{18}$**




E* = 35 MeV
1 event
112 ms
45 ms
294 117
297 117
α1
10.81(10) MeV
11.00 MeV
0.023 s
1.0 s
290 115
α2
9.95(40) MeV
10.23 MeV
28.3 s
16 s
286 113
α3
9.63(10) MeV
9.56 MeV
0.74 s
8.1 s
282 Rg
α4
9.00(10) MeV
9.43 MeV
11.0 s
13 s
278 Mt
α5
9.55(19) MeV
9.14 MeV
1.3 min
7.4 min
274 Bh
α6
8.80(10) MeV
8.43 MeV
270 Db
SF
TKE = 219(5) MeV
33.4 h
DGFRS
249Bk + 48Ca
3n
294 117
α1
290 115
α2
Bot. 8
286 113
α3
9.62 MeV
Bot. 8
282 Rg
α4
8.89 MeV
64.90 s
Bot. 8
278 Mt
α5
9.52 MeV
6.49 s
Bot. 8
274 Bh
α
8.77 MeV
13.59 min
270 Db
SF
101.0 + 89.1 MeV
79.25 h
04 May 2010 10:05:46
Bk-target I
249Bk + 48Ca
3n
294 117
α1
290 115
α2
286 113
α3
9.61 MeV
Top 4
282 Rg
α4
9.01 MeV
1.85min
278 Mt
α5
Bot. 4
274 Bh
α
8.64 MeV
<1.42 min
270 Db
SF
98.6 + 88.5 MeV
64.61 h
16 May 2010 02:29:54
Bk-target II
preliminary

$^{48}Ca + {}^{248}Cm \Rightarrow {}^{296}116^*$





experiment SHIP, 24-June – 26-July-2010

beam energy: UNILAC 5.53; after Ti backing: 5.24; center-of-target: 5.20×A MeV

target: 0.46 mg/cm^2 Cm_2O_3 on 1.05 mg/cm^2 Ti backing

excitation energy at center-of-target: 41 MeV

3.5 μm Mylar in front of Si detectors for event 1 and 2

no degrader foil for event 3

preliminary calibration of α energies, error bars ±0.04 MeV

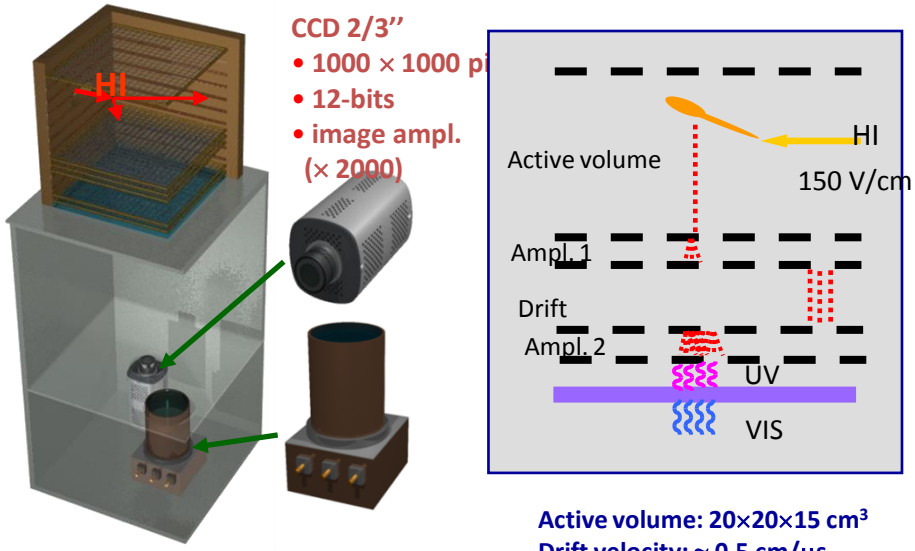
cross-section: 3.0 pb (2 events), 1.5 pb (1 event)

Experiments with radioactive beams structure of exotic nuclei

- **For the first time the isovector soft-dipole mode of excitation (1^-) was discovered in the spectrum of unbound proton-rich nuclear system ^{6}Be obtained in the reaction ^{6}Li+p;**
- **The direct experimental manifestation of the dineutron and cigar-like components of the ^{6}He WF was observed in the reaction of quasifree scattering ^{4}He(^{6}He,2a)2n;**
- **The Optical Time Projection Chamber, created in Warsaw University, was successfully tested at the fragment-separator ACCULINNA with the 8He beam.**

M. Ćwiok et al., IEEE TNS, 52 (2005) 2895

K. Miernik et al., NIM A581 (2007) 194



The layout of the Optical Time Projection Chamber

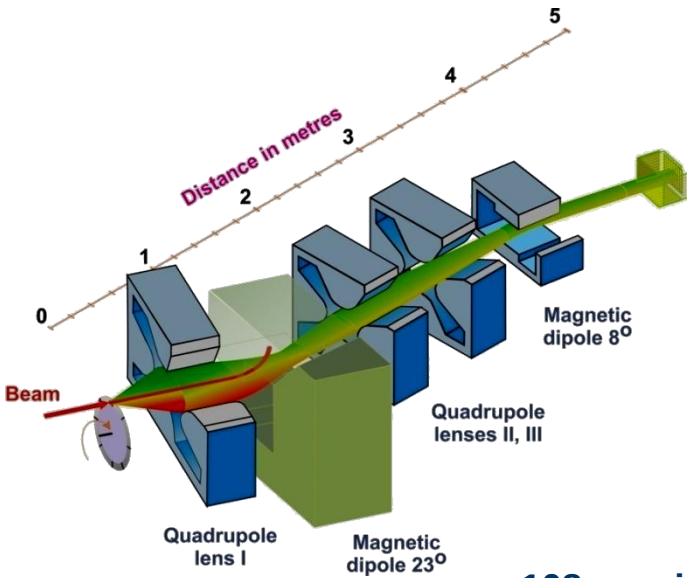
DRIBs-III

Major projects in progress:

1. **New experimental hall of the area of 2600 m^2;**
2. **New high-current heavy-ion cyclotron DC-200;**
3. **New generation facilities**

a) Gas-filled separator (DANFYSIKs technical drawing, 1.5 M$);

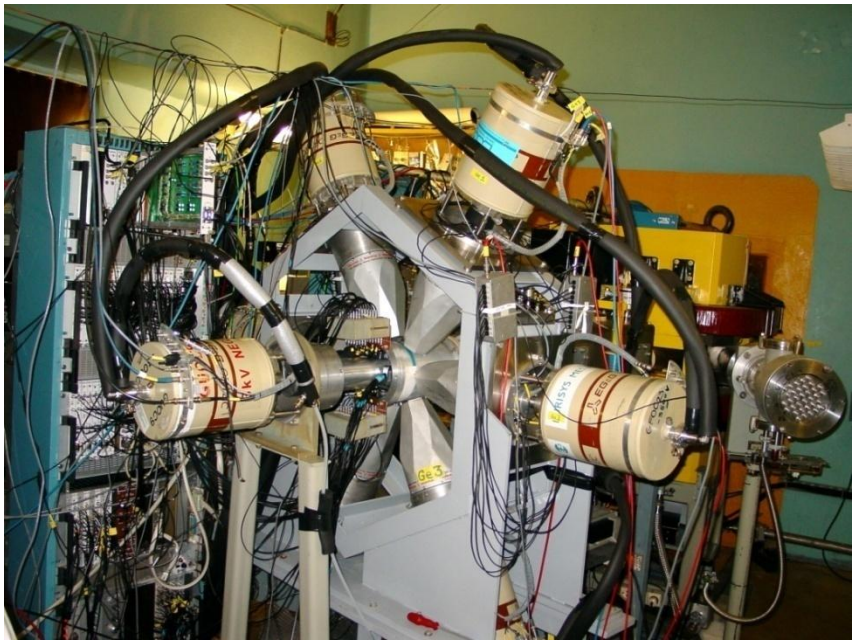
b) Fragment-separator ACCULINNA-2
(the stage of the preliminary designing, 5.5 M$);



DRIBs-III

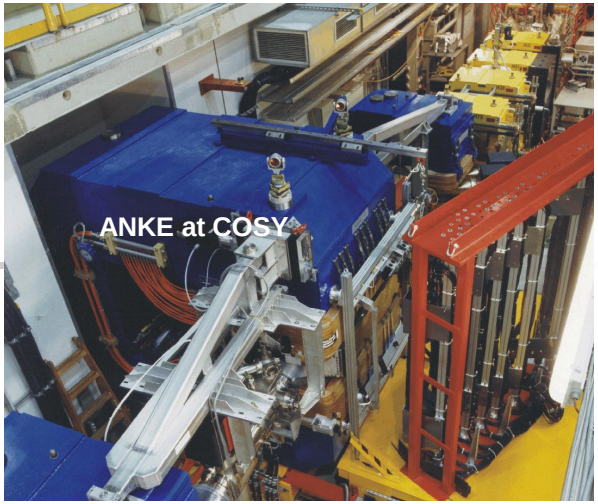
Development of the experimental base:

Modernization of the VASSILISSA-GABRIELA setup;
The first experimental run with the mass-spectrometer MASHA will start in autumn 2010.



Nuclear physics

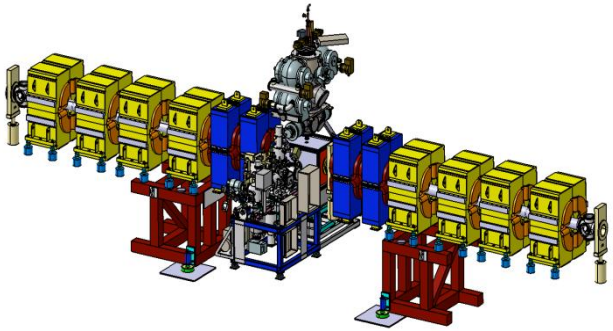
SPRING project



I. **Study of *NN*-interaction dynamics at intermediate energies** with the **ANKE** setup at **COSY** in Jülich

1. Deuteron breakup pd→$(pp)_s$n with forward emission of a fast $^1S_0$ diproton
2. Energy dependence of hard bremsstrahlung production in proton–proton collisions in the Δ(1232) region

II. **Preparations for experiment PAX at GSI aiming to study the spin structure of the nucleon in double-polarized $p\uparrow p\uparrow$ interactions.**



current stage: study of spin filtering (method of the beam polarization) with COSY.

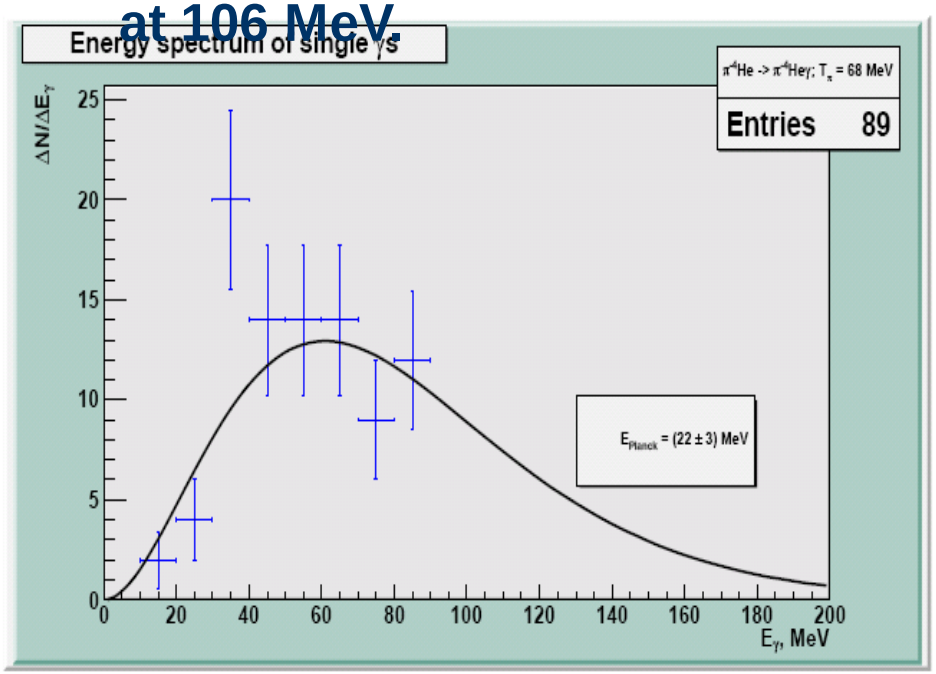
Summer 2010: installation of the equipment in the beam line

Autumn 2010: commissioning and measurements

Nuclear physics

PAINUC project

The JINR-INFN (Italy) experiment PAINUC has observed single γ-quantum production in "elastic" $\pi^- + {}^4He \rightarrow \pi^- + {}^4He\,\gamma$ interaction at 106 MeV.



Preliminary results at 68 MeV also reveal single γ-production.

If the excited ^{4}He nucleus is a Planck radiator, one obtains a Planck temperature

$E_{Planck} = 22 \pm 3$ MeV

Nuclear Physics with Neutrons: IREN

From the resolution of the Committee of Plenipotentiaries (March 2010):

To recommend the acceleration of the upgrade of IREN-1 to rapidly reach a higher intensity of the source and to make it really comparable with powerful neutron sources in Europe.

- **IREN facility operated 470 hours in 2010 (plan for 2010 – 700 hours)**
- **New 3-electrode electron gun was designed and manufactured**
- **Purchase of the Toshiba E3730A klystron is in progress**
- **Experimental and educational program at IREN started**

From the resolution of the Committee of Plenipotentiaries (March 2010):

"To note with satisfaction that modernization of the IBR-2 reactor is proceeding in full accordance with the technical and financial plans, the accomplishment of the physical start-up of the modernized IBR-2M reactor being the main task for 2010".

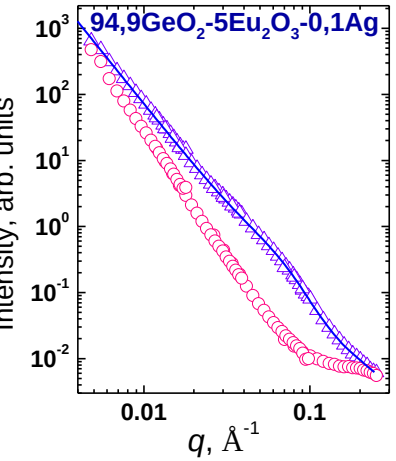
2010: IBR-2 Modernization

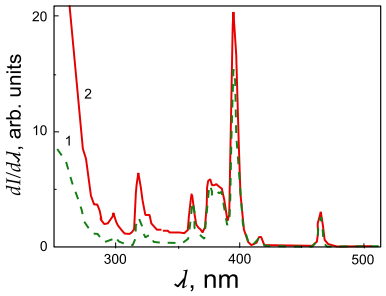
The physical start-up is scheduled for the 4-th quarter of 2010

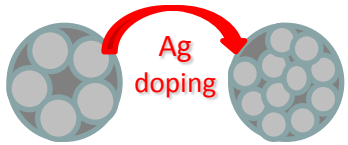
August 2010

– Tests of the automatic control system (left)

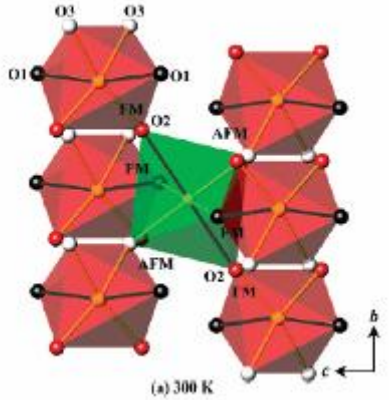
– Tests of the cryogenic moderator (up)



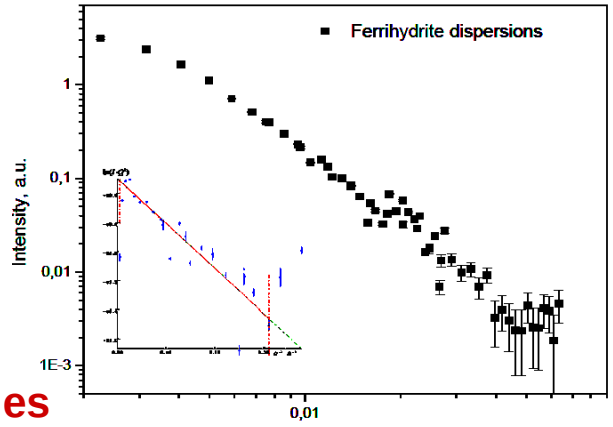


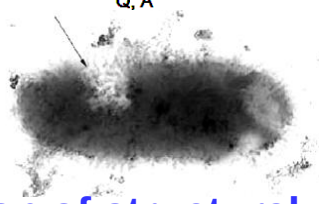


Luminescence control by nanoclusters formation in GeO_2-Eu_2O_3-Ag system



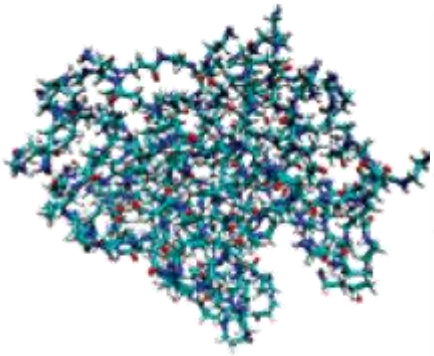
Structure and properties of multiferroic $BiMnO_3$

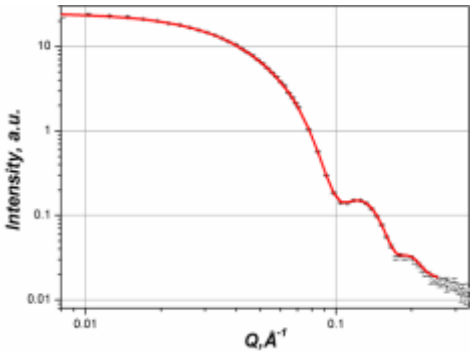




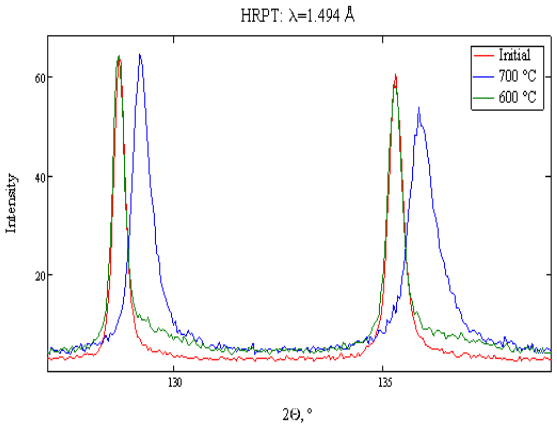
Determination of structural and magnetic properties of biogenic ferrihydrite nanoparticles

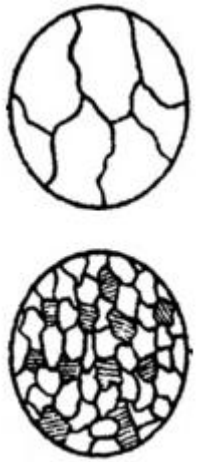
Main results 2010





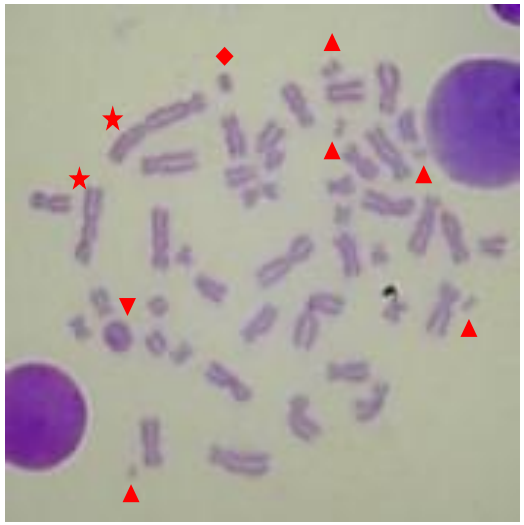
Localization of End Groups in Dendrimers





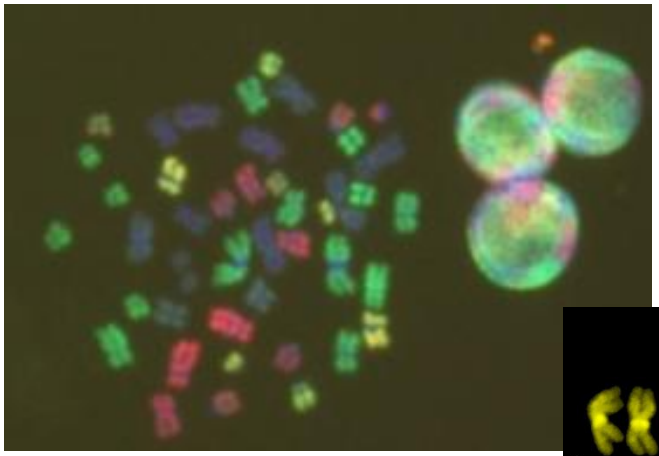
Modification of mechanical properties of steel by formation of nanoparticles

RADIOBIOLOGY: co-operation with GSI (Darmstadt)

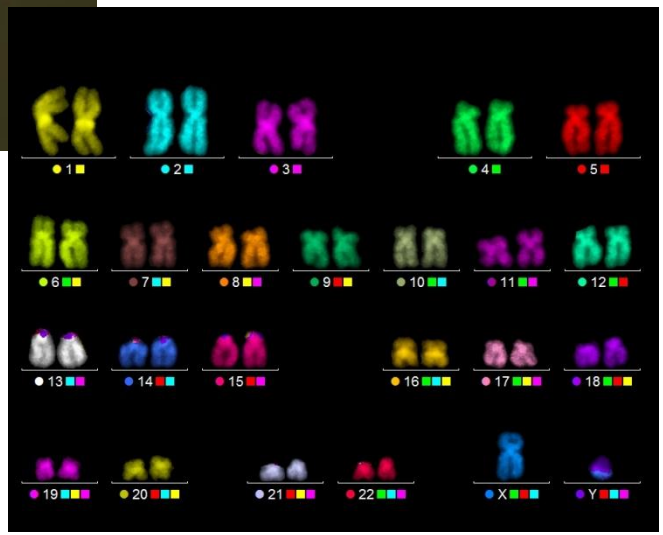


Solid staining

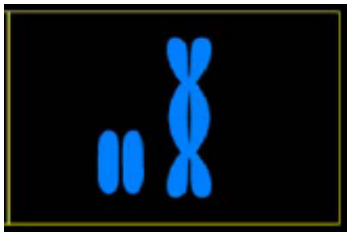
multiplex Fluorescence In Situ Hybridization (mFISH)

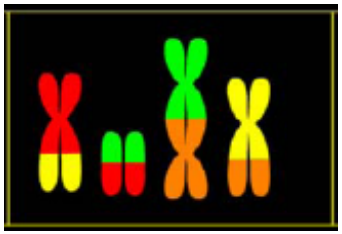


mFISH karyogramm



Detection of interchromosomal rearrangements which are missed with solid-staining methods

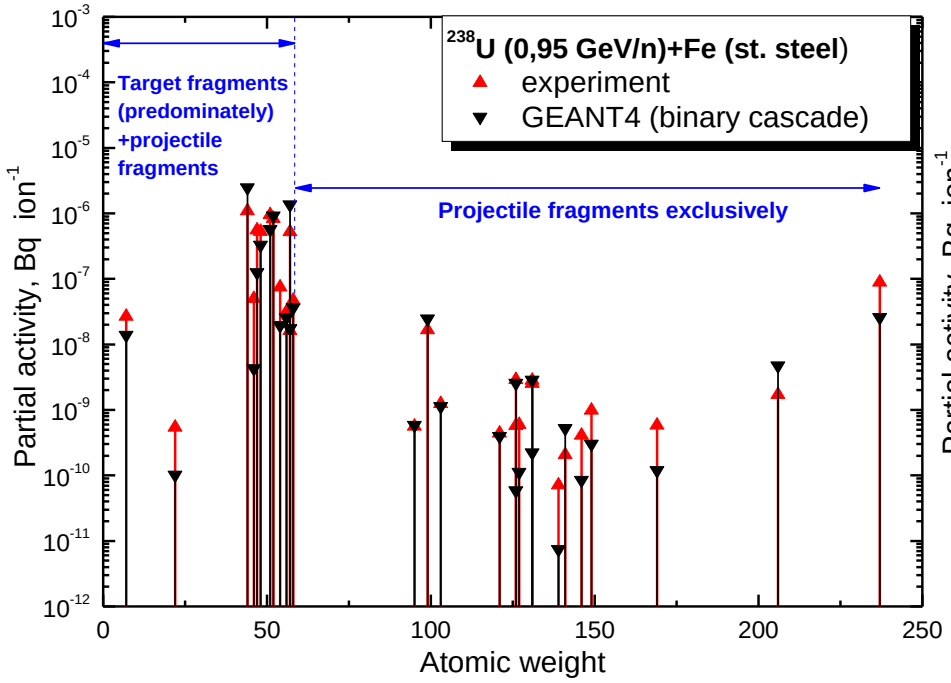


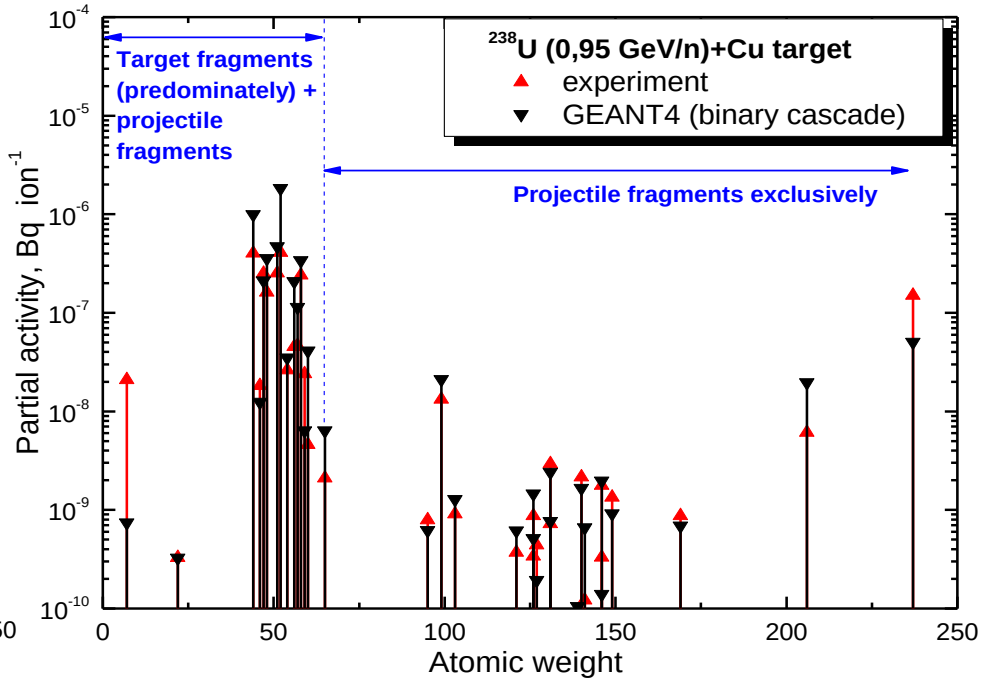


(Loucas et al., Rad.Res., 2004)

➔unique color signature for each chromosome

NICA Radiation Protection





A comparison of the partial and total activities of the residual radio-nuclides ($T_{1/2}$ > 2 days) in thick stainless steel and copper targets simulated by the GEANT4 code and respective experimental data is presented.

Target	Total activity, Bq·ion^{-1}	
	Experiment *	GEANT4
St. steel	5.01E-6	5.93E-6
Copper	2.09E-06	3.13E-06

***** I. Strašík, et al., Experimental study of the residual activity induced by 950 MeV/u uranium ions in stainless steel and copper, Nucl. Instr. and Meth. in Phys. Res. B 266 (2008) 3443-3452.

Main Supporting Activities

- Theoretical Physics
- IT and Telecommunications
- Educational Programme

Theory: main directions of research in 2010

Theory of Elementary Particles and Fields

- Standard Model and Its Extension
- QCD Parton Distributions for Modern and Future Colliders
- Physics of Heavy and Exotic Hadrons
- Mixed Phase in Heavy-Ion Collisions

Nuclear Theory, Nuclear Structure and Dynamics

- Nuclear Structure far from Stability Valley
- Nucleus-Nucleus Collisions and Nuclear Properties at the Low Energies
- Exotic Few-Body Systems
- Nuclear Structure and Dynamics at the Relativistic Energies

Theory of Condensed Matter and New Materials

- Physical properties of complex materials and nanostructures
- Mathematical problems of many-particle systems

Educational Project

"Dubna International School of Theoretical Physics (DIAS-TH)"

Modern Mathematical Physics

- Quantum groups and integrable systems
- Supersymmetry
- quantum gravity, cosmology and strings

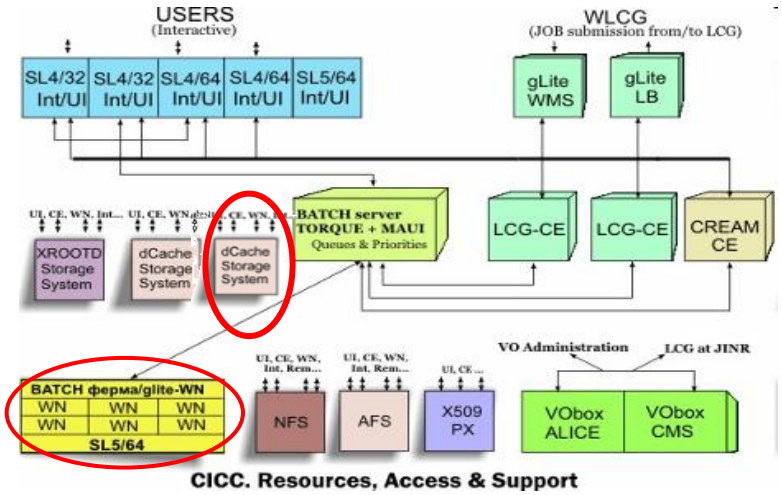
2010: Conferences, Workshops, Schools
Total - 14 (> 1000 participants)
DIAS-TH Schools for young scientists - 3

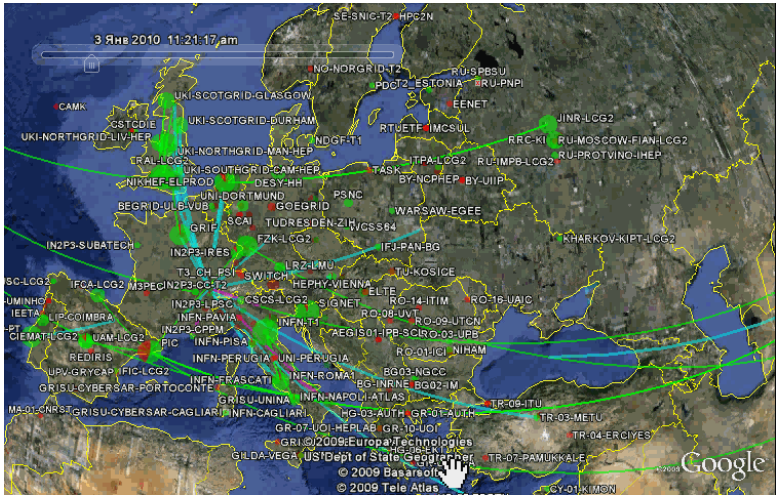
Publications, Jan.-Sept. 2010
Journals ~ 180
Total ~ 330

IT and Telecommunications
JINR Central Information and Computing Complex

In 2010, the CICC performance equals 2800 kSI2K and the disk storage capacity amounts 1068 TB

(Plans for the end of 2010 – 2500 kSI2K and 1200 TB respectively)





The JINR Grid-site takes the 10th place among 133 Tier2 sites worldwide.

EDUCATIONAL PROGRAMMES

From the resolution of the Committee of Plenipotentiaries (March 2010):

"To note the importance of the further support of the JINR educational programmes to ensure that the future scientific and technological workforce needs of the Member States are met".

Advanced Education Programmes

The goal of JINR educational program is to make the Institute a big physics practicum for students from the Member-States Universities.

The International summer student Practice becomes very popular among Universities of the JINR Member-States.
It is organized in three stages: in May, July and September. In 2010, total amount of students from 8 JINR Member-States who took part in the Practice is 114 (88 in 2009).

Practice of South Africa students

23 students from 10 universities of the Republic of South Africa came to Dubna for the Practice for the first time in December 9 – 19, 2007.

21 and 24 students arrived to participate in the Practice in 2008 and 2009, respectively. Some of them came to the Practice twice and several started their collaboration with JINR research teams.

2010, September 7-24

This year the practice was organized for 29 students from 11 different institutions of SA.

The practice will promote the involvement of the SA students to the research at JINR laboratories.

Advanced Education Programmes

Propagation of the fundamental science

The JINR University Centre in cooperation with CERN organizes the annual School Teacher Programmes at JINR and CERN.

The first School for Russian teachers was held in November 2009 at CERN

The second scientific school for teachers from JINR Member States was held in July 2010 at JINR.

44 teachers from Czech Republic, Belarus, Bulgaria, Russia and Ukraine took part in that School.

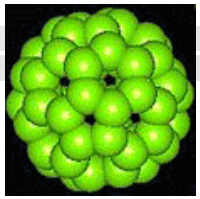
Joint ISTC-CERN-JINR Summer School
on High Energy Physics and Accelerator Physics
ASTANA, 27 September - 3 October 2010
NATIONAL NUCLEAR CENTER
L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY

Applied Studies & Innovations

From the resolution of the Committee of Plenipotentiaries (March 2010):

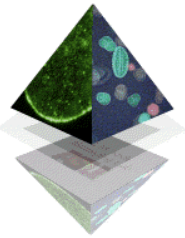
"To note with satisfaction the establishment of the International Innovative Nanotechnology Centre for the countries of the Commonwealth of Independent States as a non-profit partnership at the foundation forum held in Dubna in December 2009".

International Innovative Nanotechnology Center of the CIS countries (InINCIS)



- **InINCIS is open to the membership of our partners from all JINR Member States. We plan that in 2011 scientific centers and companies of EU countries will join our Center.**
- **For its charter tasks InINCIS conducts the following activities:**
  - **Formation of databases on innovative projects, companies, financial resources**
  - **Training of personnel: different study courses and outside education sessions**
  - **Attraction of financial resources for innovative projects from CIS countries.**
- **In 2010 – 2011 InINCIS will give grants to young scientists and specialists from CIS countries, organize study courses and conferences.**
- **According to the initiative of the Russian Ministry of Science and Education approved by CIS Executive Committee, InINCIS has prepared documents for the status of CIS base organizations in the sphere of nanotechnology, scientific and innovative activities.**

“DUBNA” Nanocenter



- On 26 March 2010, JINR together with its partners won the first competition organized by the Russian state corporation «Rusnanotech» for the creation of multifunctional infrastructure nanotechnology center in Dubna. On 31 August 2010 RUSNANO and JINR signed an investment agreement, according to which the nanocenter project is now developed.
- At the expense of RUSNANO, modern equipment will be purchased (over 1,0 billion roubles), and located in JINR and some other large companies – residents of the Dubna SEZ.
- RUSNANO and JINR are establishing the center for technology transfer – CJSC «International Innovative nanotechnology Center», which will coordinate the employment of personnel in all nanocenter infrastructure in Dubna and will provide formation of project teams and start-ups.

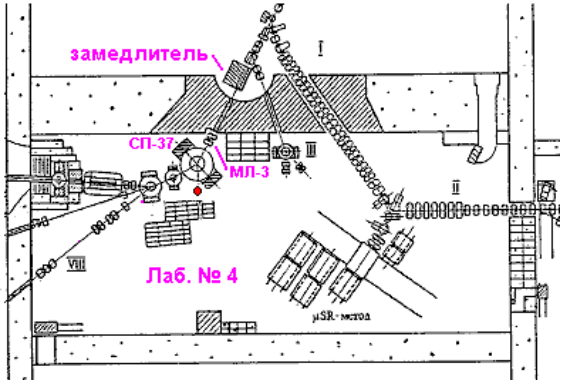
Applied research

Phasotron operation time in 2010: 565.5 hours

69 patients were treated in 2010 on Phasotron proton medical beams.
3412 dose fields were formed for patient treatment.
In total 664 patients have been treated since 2000.

Session	Medicine	Phasotron exploitation	Generator
24.01-19.02	99 h.	18 h.	11.5 h.
9.03-26.03	88 h.	8 h.	
9.04-30.04	85 h.	9 h.	
28.05-9.07	234 h.	13h.	
Total	506	48 h.	11.5 h.

A low energy proton beam (25-400 MeV) was shaped to test electronic equipment for operation in space.



Scheme of experiment of low energy proton beam formation

Execution of the JINR budget in 2009

From the resolution of the Committee of Plenipotentiaries (March 2010):

1. To take note of the information on the execution of of the JINR budget in 2009:
   in expenditure — US$ 72 068.4 thousand,
   in income — US$ 74 181.9 thousand.

2. To empower the company “MS-Audit” to examine the Institute’s financial activity for the year 2009 and to approve the plan for auditing this activity, presented by the JINR Directorate.

Election of the Director of JINR

The Committee of Plenipotentiaries RESOLVES:

"Based on the results of open voting, to elect unanimously Professor A. Sissakian as Director of JINR for a term of 5 years, in accordance with the JINR Charter and the Regulation for the Director of JINR".

II.

May 2010: Extraordinary session of the JINR Committee of Plenipotentiaries

II.

Regarding the information presented by S. Dubnička, Chairman of the Committee of Plenipotentiaries of the Governments of the JINR Member States,
"Premature termination of the powers of the Director of JINR, Academician A. Sissakian",

the Committee of Plenipotentiaries RESOLVES:

"To terminate prematurely, as of 1 May 2010, the powers of the Director of JINR, Academician Alexei Sissakian, due to his death".

II.

“Appointment of the Acting Director of JINR”

the Committee of Plenipotentiaries RESOLVES:

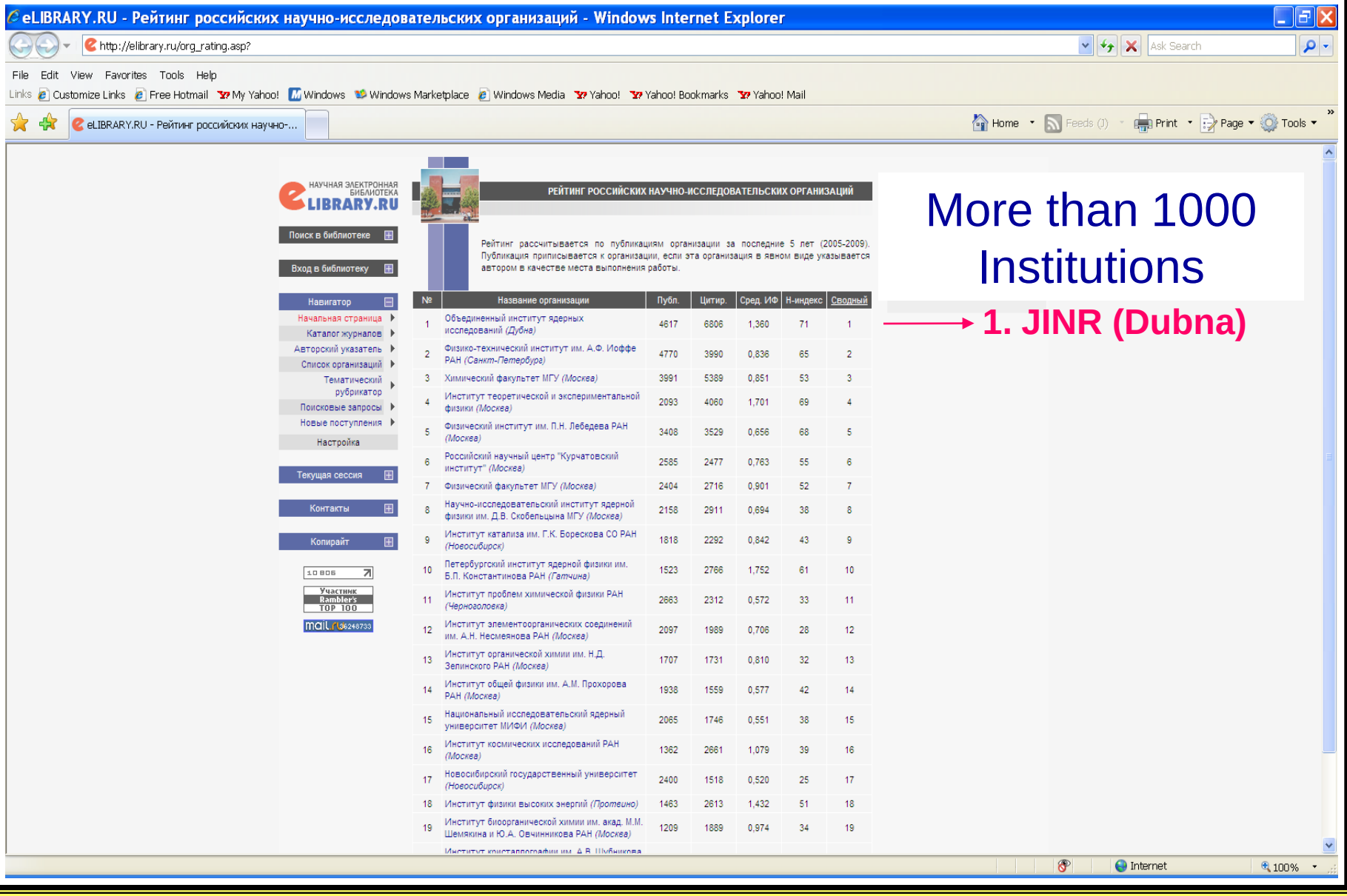
“To appoint the Vice-Director of the Institute, Mikhail Itkis, as Acting Director of JINR until the election of a new Director of the Institute at a session of the Committee of Plenipotentiaries of the Governments of the Member States of the Joint Institute for Nuclear Research”.

III. CONCLUSION

In general, JINR activities in 2010 can be estimated as quite successful and in line with the schedule.

In particular, it is due to the current stable financial situation at JINR which is one of the most important prerequisites for the started 7-year programme implementation.

TOP LIST OF RUSSIAN SCIENTIFIC-RESEARCH ORGANIZATIONS



More than 1000 Institutions

→ **1. JINR (Dubna)**

Thank you!