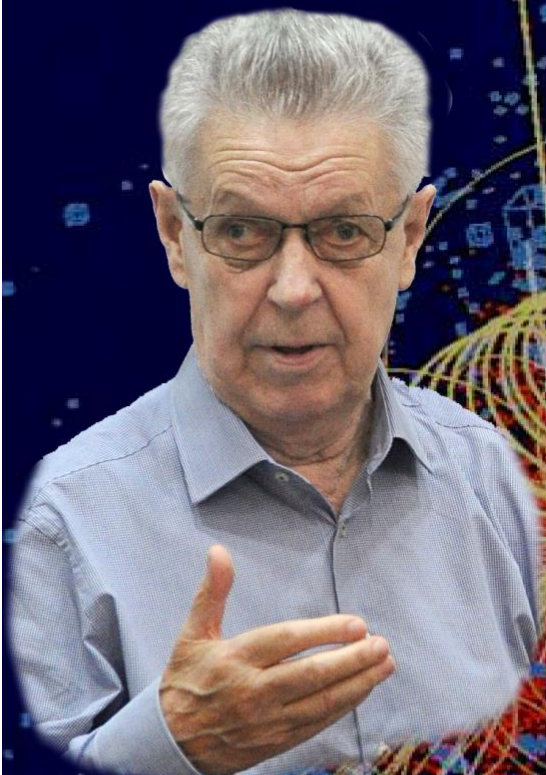


JOINT INSTITUTE FOR NUCLEAR RESEARCH
**EXPERIMENTAL METHODS IN
PARTICLE PHYSICS**



**International Scientific Seminar
dedicated to the memory and 90th Anniversary of
Professor I.A.Golutvin**

8 August 2024 at 10:00

Dubna JINR International Conference Hall

Agenda and registration at site:

<https://indico.cern.ch/event/1404918/>

Повестка дня

10:00 В.А. Матвеев “Открытие”
10:10 В.А. Матвеев “RDMS и международное сотрудничество”
10:30 А.И. Голутвин “Quick memory from the son”
10:50 G. Tonelli “Shoulder by shoulder with Igor Golutvin: the journey toward the discovery of the Higgs boson”

11:20 Кофе

11:35 P. Spiccas “Particle Physics after the HL-LHC”
12:05 А.В. Зарубин “Ученый, устремленный в будущее”
12:25 Выступления
Ю.Ц. Оганесян
В.П. Сметанников
М.К. Волков

.....
13:00 Обед

14:30 В.Ю.Каржавин “Создание детекторных систем CMS”
14:50 С.В. Шматов “Физическая программа CMS”
15:10 В.В. Кореньков “CMS компьютеринг”
15:30 А.Н. Никитенко “Наблюдение резонанса с массой 28 ГэВ на данных CMS Run I и Run II”

15:50 Кофе

16:10 В.Т. Ким “Воспоминания о физике”
16:30 Н.В. Красников “Поиск темной материи”
16:50 А.Г. Крившич “И.А.Голутвин – Оправдана лишь преданность науке”

17:10 Памятные выступления

L. Litov
W. Lohman
В. Макаренко
А. Тумасян

18:00 Закрытие

90 лет со дня рождения профессора Голутвина Игоря Анатольевича

Действительного члена Академии инженерных наук РФ и Академии естественных наук РФ

Заслуженного деятеля науки РФ

Лауреата премии РАН им А. П. Черенкова (2013)

Голутвин Игорь Анатольевич – выдающийся ученый, основатель нового направления и новых методов исследования в области физики элементарных частиц, методики и техники физического эксперимента, автор более 950 научных работ и трех изобретений, его авторитет признан на мировом уровне.

Под руководством Голутвина И.А. создано несколько поколений современных крупномасштабных физических установок для экспериментов на синхрофазотроне Объединенного института ядерных исследований в Дубне, ускорителе Института физики высоких энергий в Серпухове, на протонном синхротроне и Большом Адронном Коллайдере международного европейского центра ЦЕРН в Женеве.

Эти работы оказали большое влияние на общий уровень методики физического эксперимента.



90 лет со дня рождения профессора Голутвина Игоря Анатольевича

1958 ОИЯИ

Автоматизация обработки камерный снимков
Первые блоки быстрой электроники на транзисторах

60-е

Пионерские работы по методике искровых камер
Первый в СССР on-line эксперимент на синхрофазотроне по пион-протонному рассеянию на малые углы в области кулон-ядерной интерференции

Эксперимент по регенерации каонов на У-70 в Протвино

70-е

Диагностика пучков КУТИ,
NA4 - первый совместный эксперимент ОИЯИ-ЦЕРН

80-е

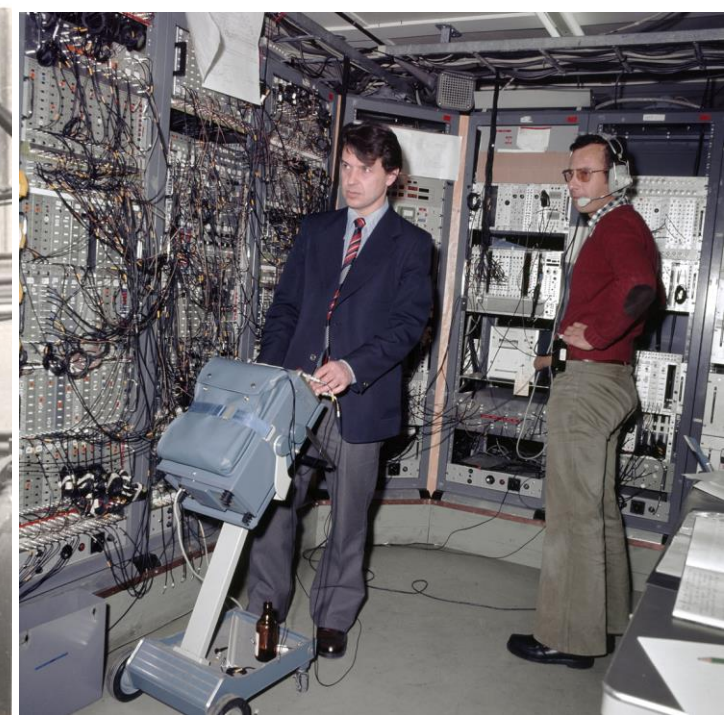
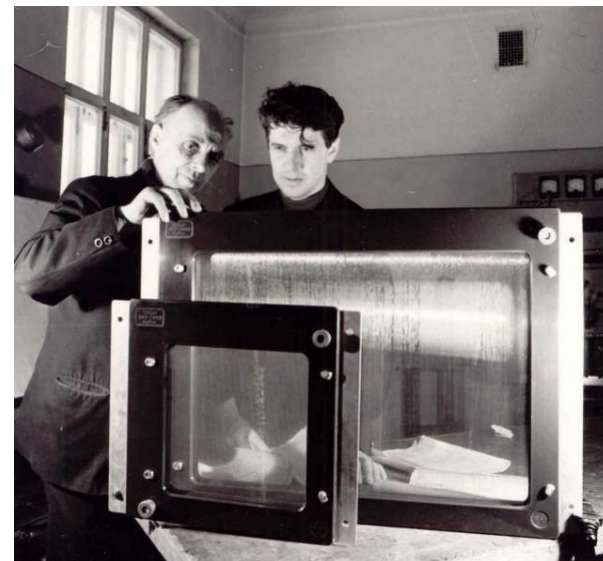
Эксперименты Нейтринный детектор, Сигма, Аномалон, Меченые нейтрино, SMC и многие другие на синхрофазотроне в ОИЯИ, У-70 в ИФВЭ, SPS ЦЕРН

90-е

Начало экспериментальных программ на суперколлайдерах

2000-е

Участие в подготовке и запуске экспериментального комплекса CMS на Большом адронном коллайдере

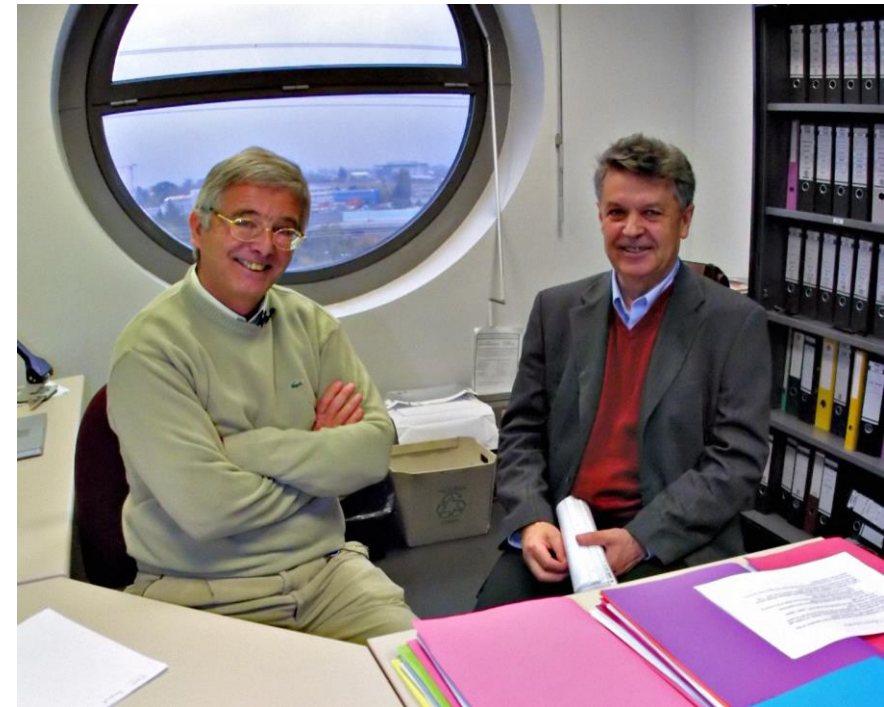


90 лет со дня рождения профессора Голутвина Игоря Анатольевича

Голутвин И.А. является одним из инициаторов проекта экспериментального комплекса CMS (Компактный мюонный соленоид)

Многоцелевого детектора, крупнейшего из когда-либо создаваемых экспериментальных установок в области физики высоких энергий, объединяющего ученых и инженеров из 31 страны и ориентированного на открытие Хиггсовского бозона, проверку Стандартной модели и поиску новых явлений в области сверхвысоких энергий.

Органической и неотъемлемой частью этого проекта является сотрудничество в рамках международной коллаборации CMS ученых России и других стран участниц ОИЯИ (RDMS CMS), созданное под научным руководством Голутвина И.А., объединившее около 300 ученых и специалистов, и основанное на широком вовлечении промышленности и потенциала отраслевой науки участвующих стран.



CMS DETECTOR

Total weight : 14,000 tonnes
Overall diameter : 15.0 m
Overall length : 28.7 m
Magnetic field : 3.8 T

STEEL RETURN YOKE

12,500 tonnes

SILICON TRACKERS

Pixel (100x150 μm) - 1m² - 66M channels
Microstrips (80x180 μm) - 200m² - 9.6M channels

SUPERCONDUCTING SOLENOID

Niobium titanium coil carrying -18,000A

MUON CHAMBERS

Barrel: 250 Drift Tube, 480 Resistive Plate Chambers
Endcaps: 540 Cathode Strip, 576 Resistive Plate Chambers

PRESHOWER

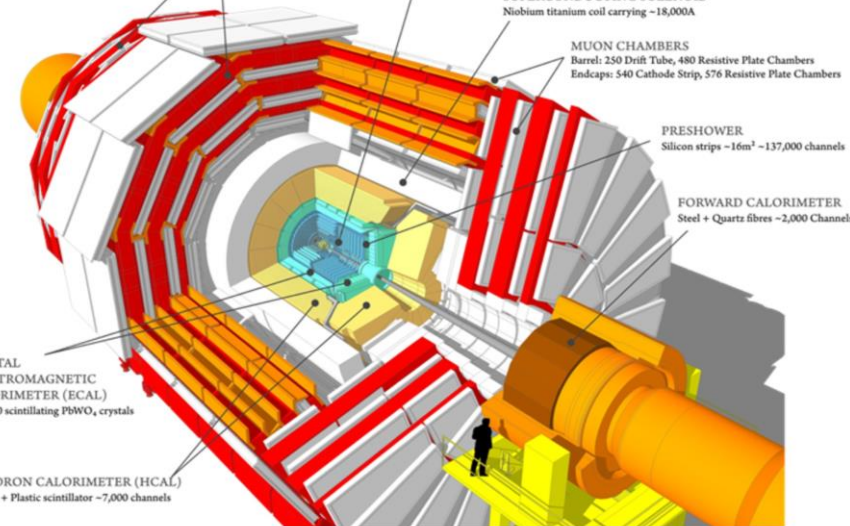
Silicon strips - 16m² - 137,000 channels

FORWARD CALORIMETER

Steel + Quartz fibres - 2,000 Channels

CRYSTAL ELECTROMAGNETIC CALORIMETER (ECAL)
- 76,000 scintillating PbWO₄ crystals

HADRON CALORIMETER (HCAL)
Brass + Plastic scintillator - 7,000 channels



90 лет со дня рождения профессора Голутвина Игоря Анатольевича

Голутвин И.А. за время своей работы в ОИЯИ создал научную школу, научно-методическое отделение и воспитал коллектив активных и квалифицированных физиков и инженеров, труды которых пользуются широким признанием в нашей стране и за рубежом.

Голутвин И.А. внес значительный вклад в объединение в рамках международной коллаборации CMS ученых и специалистов России и других стран участниц ОИЯИ, поставивших перед собой цель сохранить для России научные школы, уникальные коллективы инженеров и физиков, в создание благоприятные условия для привлечения одаренных молодых физиков.





RDMS -
30 years of
joint work
in the CMS
Project
at the LHC
(1994 – 2024)





Russia and Dubna Member States Collaboration in CMS Project

Victor A. Matveev (JINR)

**International Scientific Seminar "Experimental Methods in Particle Physics"
Seminar dedicated to the memory of the Prof. I.A. Golutvin and his 90th Anniversary**

August 8, 2024

Igor Golutvin was Spokesman of RDMS CMS Collaboration since the very beginning



30 years RDMS Collaboration
participates in the CMS
experiment with outstanding
contribution in CMS Detector
construction, operation and
maintenance as well as data
taking and physics analysis



Beginning of RDMS - CMS cooperation

Important events:

- CMS Expression of Interest, Evian, 5 March 1992
- CMS Letter of Intent, CERN/LHCC 92-3, 1 October 1992
- Establishment of the RDMS CMS Collaboration, Dubna, September 1994
- CMS Technical Proposal, CERN/LHCC 94-38, 15 December 1994
- Russian scientific policy committee recognized participation of Russian laboratories in LHC project as major direction of the Russian national program , Arzamas-16, Sarov, October 1995
- RDMS CMS project, CMS document 96-85, December 1995
- Interim MoU CMS RRB-D 96-6, 15 March 1996
- RF government decree on annual funding for 10 years since 1997, №818-p, 22 May 1996
- Protocol RF – CERN on participation in LHC project, 14 June 1996
- Protocol JINR – CERN on participation in LHC project, 14 April 1997
- MoU on CMS detector construction, CMS document 1998-053, 29 April 1998
- MoU for maintenance and operation of CMS, CERN RRB-2002-033, 24 May 2002



Some historical documents



JINR directorate support on participation in CMS



ОБЪЕДИНЕННЫЙ ИНСТИТУТ ЯДЕРНЫХ ИССЛЕДОВАНИЙ
JOINT INSTITUTE FOR NUCLEAR RESEARCH

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Telefax: (7-095) 975-23-81 Telex: 911621 Dubna SU AT: 846013 ВОЛНА
E-mail: post@office.jinr.dubna.su Tel.: (09621)65-059

04.10.1993

№ 010-41/599

на № _____ от _____

Professor Michel Della Negra
CMS spokesman
CERN

1

Dear Michel,

Following our numerous discussions, I would like to clarify our view of the JINR participation in CMS.

(1) JINR is willing to participate in CMS Our major contribution is expected to be focused at the following directions:

- preshower detector for electro-magnetic calorimetry;
- cathode strip chambers for CMS forward muon stations;
- hadron calorimetry;
- silicon pad detectors for end-cap calorimeter;

JINR directorate will do all its best to coordinate the activity of the groups from the JINR member states in these directions, and give them the maximal support.

(2) In the Detector Department headed by I.Golutvin there is a considerable amount of resources and highly skilled manpower which we are planning to assign to CMS. The JINR central facility resources and the power of the groups from other laboratories will also contribute to the program.

(3) The JINR representative in CMS is Igor Golutvin who is coordinating all CMS activity at JINR. He reports to Alexei Sissakian, the JINR vice director who is coordinating all the international activity of JINR in particle physics.

I believe our cooperative efforts will make a good contribution for CMS to be succesful.

Sincerely yours,

1993

Vladimir Kadyshevsky
Director of JINR

Expression of CMS interest on RDMS responsibilities



ORGANIZATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Laboratoire Européen pour la Physique des Particules
European Laboratory for Particle Physics

CERN
M. Della Negra CERN/PPE
1211 Geneva 23
Phone : 0041-22-7675981
Fax : 0041-22-7678940

Dr. I. Golutvin
Joint Institute for Nuclear Research
Dubna
Moscow region
RU-141 980

Geneva, 1 June 1994

Dear Igor,

In order to prepare the chapter on "Organisation of the Collaboration" for the technical proposal, the CMS management requests to present how the Russia and JINR member states groups will be organised in CMS and their expected sharing of responsibilities and contributions.

CMS is interested to see major material contributions from Russia and JINR member states in the following systems:

- Forward Hadron Calorimetry
- Electromagnetic Calorimetry including preshower
- Inner forward Muon Station : MF1
- Central tracking
- First Level Trigger, Front-end electronics and DAQ

CMS encourages groups from Russia and JINR member states to form strong joint teams able to take responsibility for visible parts of the CMS detector.

Yours sincerely,

1994

Michel Della Negra
CMS spokesman



Michel Della Negra informing Minister of Science and Technical Policy of the of Russian Federation Boris Saltykov concerning establishment of RDMS on September 28, 1994



Dr. B.G.Saltykov
Minister of Science and
Technical Policy
of Russian Federation

Dear Dr. Saltykov,

The LHC project is poised for approval, hopefully before the end of this year. The planning of the experimental programme is well advanced and CMS is one of two proton-proton experiments which has received provisional approval.

The CMS collaboration consists at present of some 1100 physicists from 31 different countries. Physicists from Russia and Dubna member states represent about 25% of the collaboration. A further 25% come from the USA and the remaining 50% are from the CERN member states.

The CMS-Russia-Dubna collaboration is preparing a Letter of Intent which will be submitted to you. This will describe the scientific aims of the project, the contribution which the Russia - Dubna collaboration wish to make, their management structure and their funding request.

In a recent meeting, held in Dubna on 27th-28th of September, the spokesman and chairman of the CMS-Russia-Dubna collaboration were elected. Drs I.Golutvin and V.Matveev were chosen for these positions respectively. They will be responsible for submitting the Letter of Intent.

From its inception CMS has greatly benefitted from the contributions made by Russia-Dubna member states. It is clear that Dubna has an important role to play in coordinating this effort in the future as will be emphasized in the Letter of Intent.

We are sure that you will appreciate the scientific merit of this international enterprise and we hope that you will be able to give it your support.

Yours sincerely,

Dr. Michel Della Negra
CMS Spokesman, CERN

In the recent meeting, held in Dubna on 27th-28th of September, the spokesman and chairman of the CMS-Russia-Dubna collaboration were elected.
Dr. I. Golutvin and Dr. V. Matveev were chosen for these positions respectively. They will be responsible for submitting the Letter of Intent.

Basic Principle of JINR International Cooperation

Committee Plenipotentiaries of JINR Statement

On 17 and 21 March, 2022, the Extraordinary meetings of the Plenipotentiary Representatives of the Governments of the JINR Member States were held. The CP of JINR accepted the Statement on the necessity to preserve the unity of the Institute and international scientific partnerships.

- ❑ The Committee of Plenipotentiaries has called all the Institutes of Member States to stand together and act by joining forces to preserve the stability and unity of JINR for the sake of fulfillment of the scientific mission of the Institute and the development of international cooperation.
- ❑ The CP JINR expresses full commitment to the Charter of the Institute, reasserting that all common resources are used solely for peaceful purposes and the benefit of human mankind.
- ❑ JINR creates and sustains a unique environment for its Member States and partner countries, facilitating scientific cooperation and mutual cultural enrichment.
- ❑ The CP JINR in its Statement has reiterated the commitment to support further development of JINR as the international intergovernmental research organization, providing a valuable platform for multilateral scientific communication and collaborations. JINR should remain a distinctive scientific bridge between nations for resolution of global challenges confronting humanity in alignment with the Sofia Declaration of the Committee of Plenipotentiaries, which was adopted in Bulgaria in November 2021. <https://www.jinr.ru/posts/cp-jinr-statement-adopted-at-extraordinary-session-on-17-and-21-march-2022/>

Decision of the December 2023 Council

The CERN Council decided that CERN's cooperation with [Russian Federation](#) and [Republic of Belarus](#) will conclude in 2024 upon the expiry of the respective ICAs. The cooperation will come to an end on 27 June 2024 for the Republic of Belarus, and on 30 November 2024 for the Russian Federation. All relations between CERN and Russian and Belarusian institutions will cease as of these dates. Relations continue with scientists of Russian or Belarusian nationality otherwise affiliated with CERN.

This decision would require substantial reorganization of all our activities in CMS and rises a question about the RDMS: does that decision keel it ?



Think about a future of fundamental science



From presentation at CMS CB

1. We do not discuss the decision of the CERN Council whether it is right and fair. We are discussing the consequences of this difficult decision for the collaboration and what we can and should do in this situation
2. For many of us in the RDMS institutions – participation in the CMS project – is about 30 years of our scientific life in a big family of our colleagues in the world – and at the same time a great mission in the world scientific community.
3. Excluding participants from RDMS institutions brings a great damage to the international collaboration in general. The experience of our life tells us that the international cooperation in research problems of fundamental sciences is one of the highest values of the modern société, which is not aside but above politics because serves to all people, to all mankind.
4. At the present situation we physicists have to look how to minimize the damage for the future of our great science.



International Cooperation Agreement between CERN and JINR

Decision done by the June 2024 CERN Council:

An important item on the June Council agenda was CERN's International Cooperation Agreement with the Joint Institute for Nuclear Research (JINR), an intergovernmental organization located in Dubna, Russia, with which CERN has collaborated since 1957. **As the Council decided not to terminate the agreement, the participation of JINR in CERN's activities continues.** However, the measures concerning JINR adopted by the Council in March 2022 still remain in place.

- JINR has lived up to and continues to fulfil their obligations within the CMS Collaboration
- Presently the JINR have intensive discussion within Collaboration concerning partial redistribution of obligations on Phase-2 CMS upgrade.



In conclusion

I would like to say on behalf of my colleagues in the RDMS institutes that we are grateful to our colleagues in the CMS collaboration for the privilege of working fruitfully together for many years for the success of our great scientific project CMS at LHC.

Knowledge of the Fundamental Laws in our Universe are being achieved at the international scientific cooperation is in the basic interests of all the mankind and should not have any national boards.

We deeply believe that peaceful scientific collaboration belongs to highest values of the modern society and we devoted to the great principle:

“Science Brings Nations Together”

Thank you!



Afterwords: You may ask: is the RDMS dead?

It would be wrong to think that the CERN Council decision in 20-21 June, 2024 making the RDMS dead.

That decision destroys not the RDMS itself but its cooperation with CERN in prolongation of the joint scientific experimental research which for many years were bringing fruitful results for the all the world.

The RDMS as the unification of the JINR and institutions and other scientific organizations of Russia and other Dubna member States can serve as an effective instrument in realization of the mega-science world projects in different areas of the fundamental research.

Jim Virdee with contributions from Michel Della Negra and Nicolas Koulberg (who dealt with RDMS and CERN matters for many decades).

Memories about Igor Golutvin.

Igor Golutvin was one of the pioneers of the long and prolific collaboration between CERN, Dubna and the Russian institutes. It was during an international conference on particle physics, in August 1964, held in Dubna in the presence of around ten European physicists, including the then DG of CERN, Victor Weisskopf and the DG-elect Bernard Grégory, that Igor Golutvin stood out, by making a presentation on the evolution of detection methods and by discussing freely with the personalities from CERN. Following this the DG, V. Weisskopf, invited Igor to come to CERN for a period of 3 months.

He arrived at CERN on October 14, 1964, the day Khrushchev was deposed. He worked to perfect spark chambers, and was adopted by CERN's supportive and convivial community in a spirit of openness and solidarity. In this climate of freedom, intellectual and scientific, he took full advantage of the exchanges and the meetings, but he already had in him the taste for scientific adventure and the idea of developing ever more efficient detectors.

In 1974, the then Director of Dubna, Prof. Bogolioubov sought to integrate a group from his Institute into one of the future experiments on the SPS. He sent the two Igers, Golutvin and Savin, for prospecting at CERN. They joined Rubbia's NA4 experiment, for which significant parts of all the detectors were designed and manufactured in Dubna, such as the large multi-wire proportional chambers and the core of the 300-ton toroidal magnet. Igor eventually became Deputy Spokesperson of NA4. The equipment was transported to Geneva on a giant Antonov IL 76 heavy transport plane, its first flight to the West.

This collaboration, and this contribution, the quality of the equipment and the work of the group of physicists and engineers, under Igor's leadership were hailed as a great success, integrating a Russian group into the CERN experimental program. This led to the invitation of groups from many Russian physics institutes to participate in several experiments on the SPS and LEP by including contribution of equipment and using the know-how and ingenuity of Russian physicists and engineers.

Igor had shown his qualities as a group leader, his motivation, his enthusiasm, great foresight and stimulating tenacity, which he later brought to CMS.

The two Igers, Golutvin and Savin, were founder members of CMS and joined before the design was completely frozen.

Igor Golutvin was very enthusiastic about the CMS concept.

His first masterstroke was to understand that to contribute effectively to this large project, efforts had to be combined. Already in 1991, he organised a meeting in Dubna not only with Dubna physicists, but also with physicists from the other Dubna Member States, including Russia. After approval of the Lol in 1993, Michel wrote to Igor asking him to formalize the RDMS contribution to CMS in view of the Technical Proposal to be submitted to the LHCC in December 1994. On 27-28 September 1994, in a meeting held in Dubna, 279 members from 27 Russian and Dubna Member States institutions collaborating on CMS decided to formally organise themselves as a single collaboration, the RDMS_CMS collaboration. Igor was elected spokesperson of the RDMS collaboration and Viktor Matveev was elected chairman of the RMS Collaboration Board. So was born RDMS, with JINR Dubna federating the efforts of the Dubna, Russia and Dubna Member States. This was exactly 60 years after his birth, in 1934, subsequently becoming a subject of anniversaries, to which many have participated.

His second masterstroke was to convince his RDMS colleagues, and the CMS Management, to make a clearly identifiable contribution from RDMS to CMS. In a community as large as RDMS, that was not necessarily as easy thing. This was accomplished by taking full charge of a part of the endcap system: HE, and ME1/1, the most crucial station of the endcap muon system. RDMS, led by Igor, collaborated very efficiently with the US scientists and engineers, who had overall charge of these systems, especially with Dan Green, the US-CMS Project Leader. RDMS still has those responsibilities. However, room was left for smaller but significant contributions to the ECAL endcaps and the Preshower.

During its formation, construction and operation, Igor was one of the pillars of CMS. His substantial contributions will remain etched in the memory and legacy of CMS. Looking back at the past 30 years of CMS it is clear that the RDMS concept, and the leadership that Igor Golutvin provided, led to great success.

The CMS collaboration remembers Igor Golutvin as a great physicist, leader and friend.

Letter to Dubna colleagues from Jim Virdee with contribution from Michel Della Negra and Nicolas Koulberg

Jim Virdee with contributions from Michel Della Negra and Nicolas Koulberg (who dealt with RDMS and CERN matters for many decades).

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