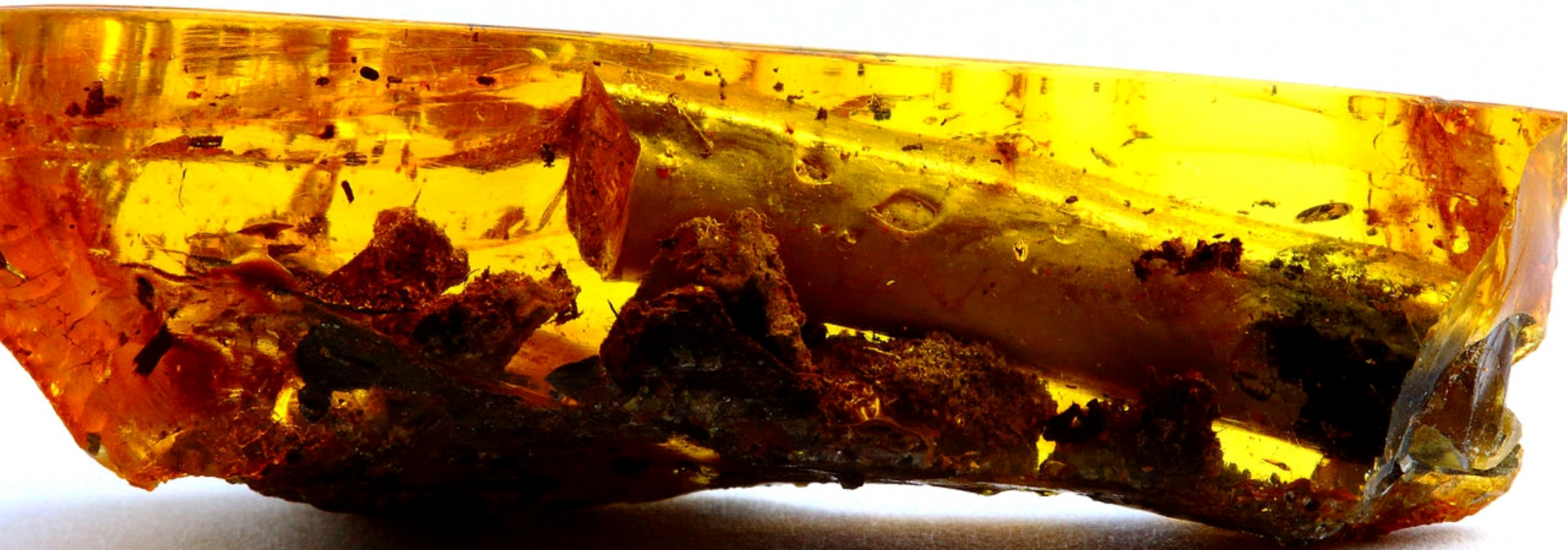


ἤλεκτρον



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Wilhelm Conrad Röntgen. The Nobel Prize in Physics 1901. Prize share: 1/1



Wilhelm Conrad Röntgen. The Nobel Prize in Physics 1901. Prize share: 1/1



Wilhelm Conrad Röntgen. The Nobel Prize in Physics 1901. Prize share: 1/1



After graduating from Saint Petersburg State Institute of Technology in 1902, Abram Ioffe spent two years as an assistant to Wilhelm Röntgen in his Munich laboratory. Ioffe completed his Ph.D. at Munich University in 1905.



Wilhelm Conrad Röntgen. The Nobel Prize in Physics 1901. Prize share: 1/1

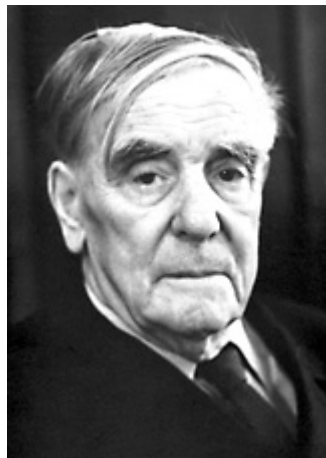


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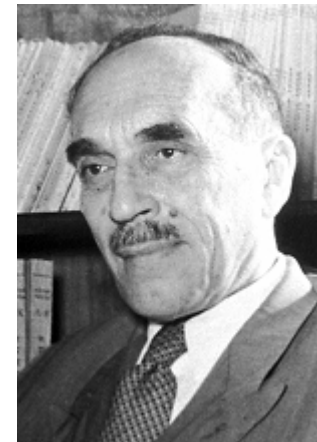


Ioffe's students:

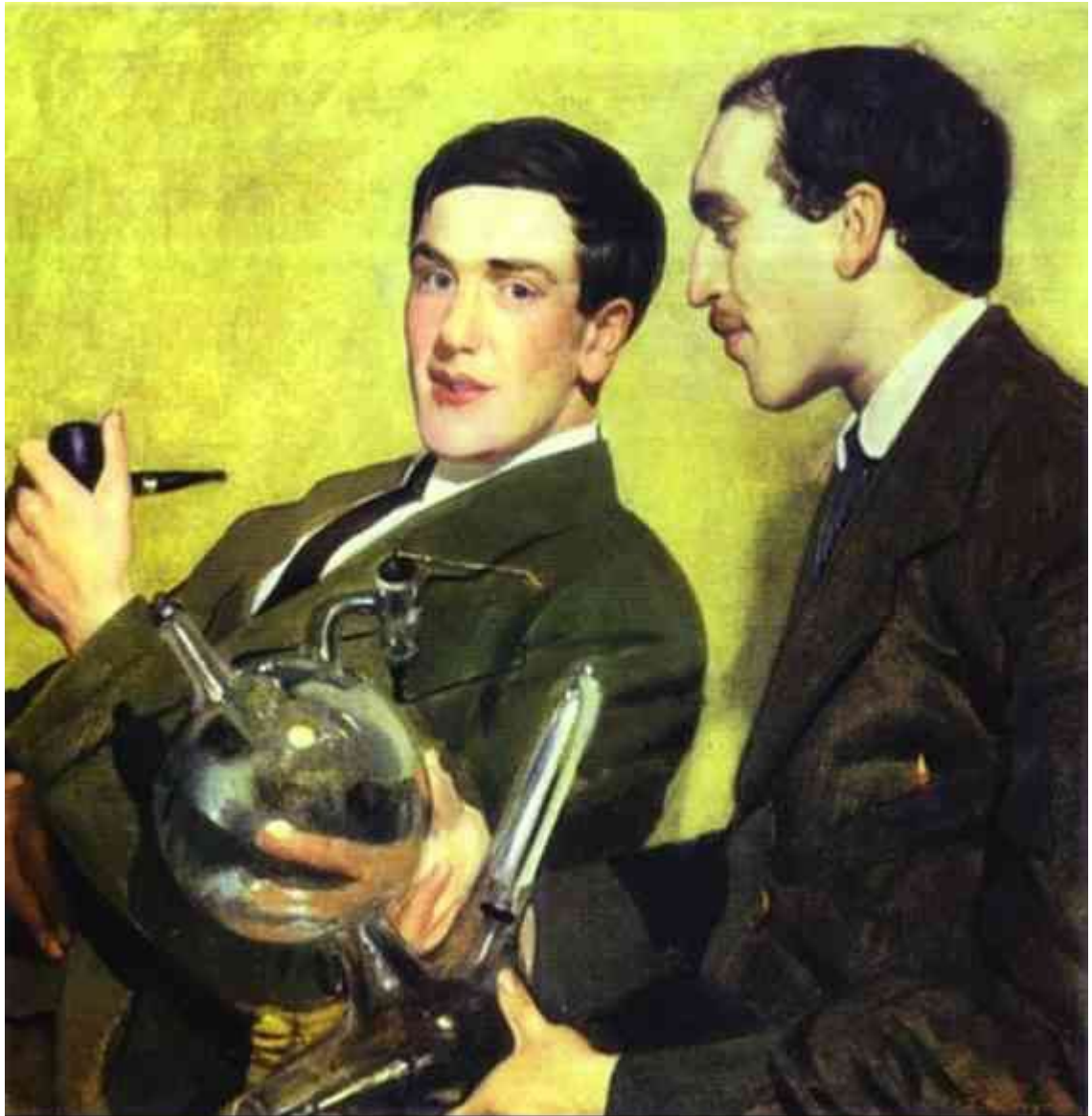
Pyotr
Kapitsa



Nikolay
Semyonov



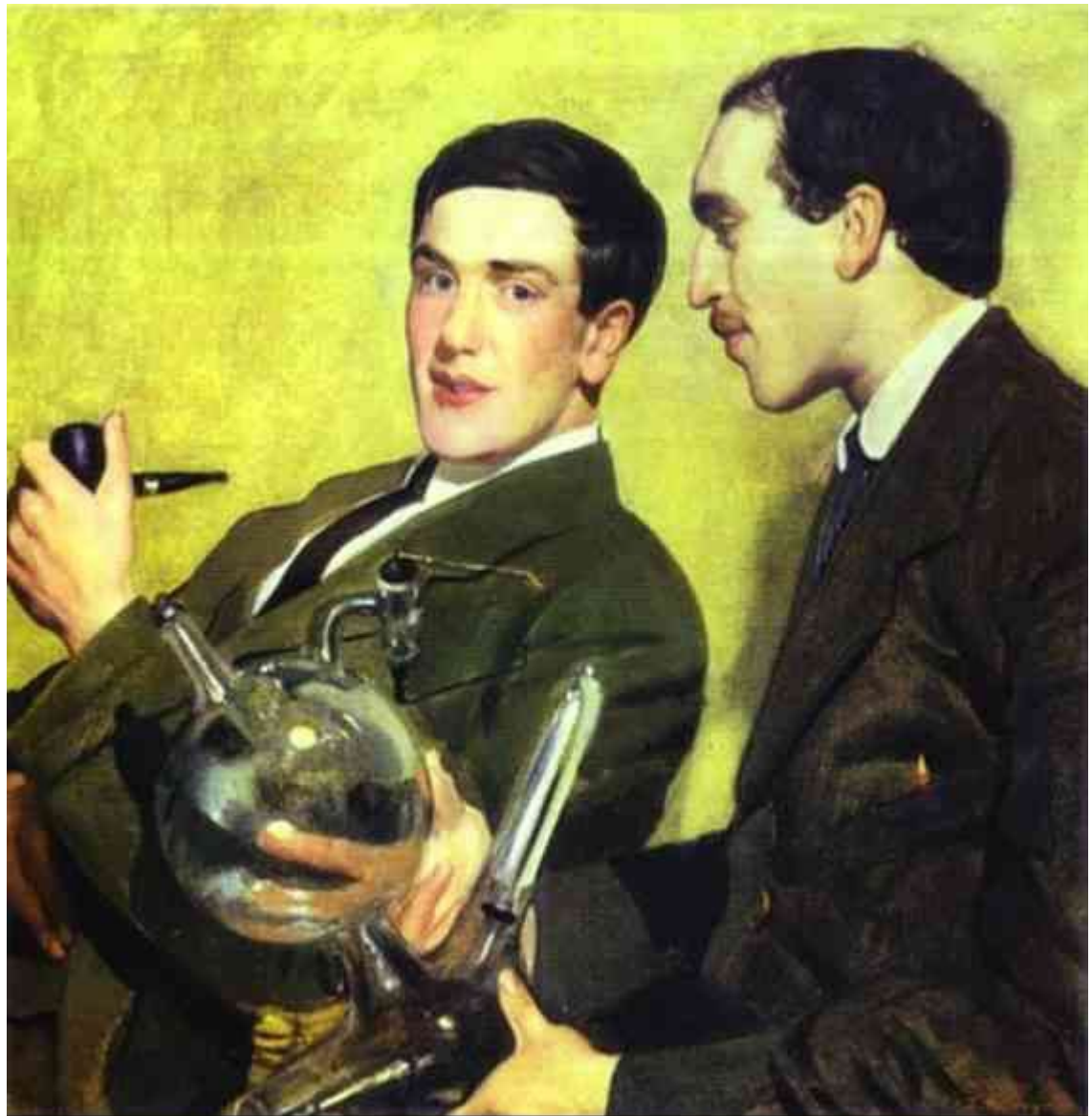
Boris Kustodiyev. Portrait
of Prof. Pyotr Kapitsa and
Prof. Nikolai Semyonov.
1921. Oil on canvas.
Kapitsa collection, Moscow



Boris Kustodiyev. Portrait
of Prof. Pyotr Kapitsa and
Prof. Nikolai Semyonov.
1921. Oil on canvas.
Kapitsa collection, Moscow

Pyotr Kapitsa. The Nobel
Prize in Physics 1978.
Prize share: 1/2

Nikolay Semenov. The
Nobel Prize in Chemistry
1956. Prize share: 1/2

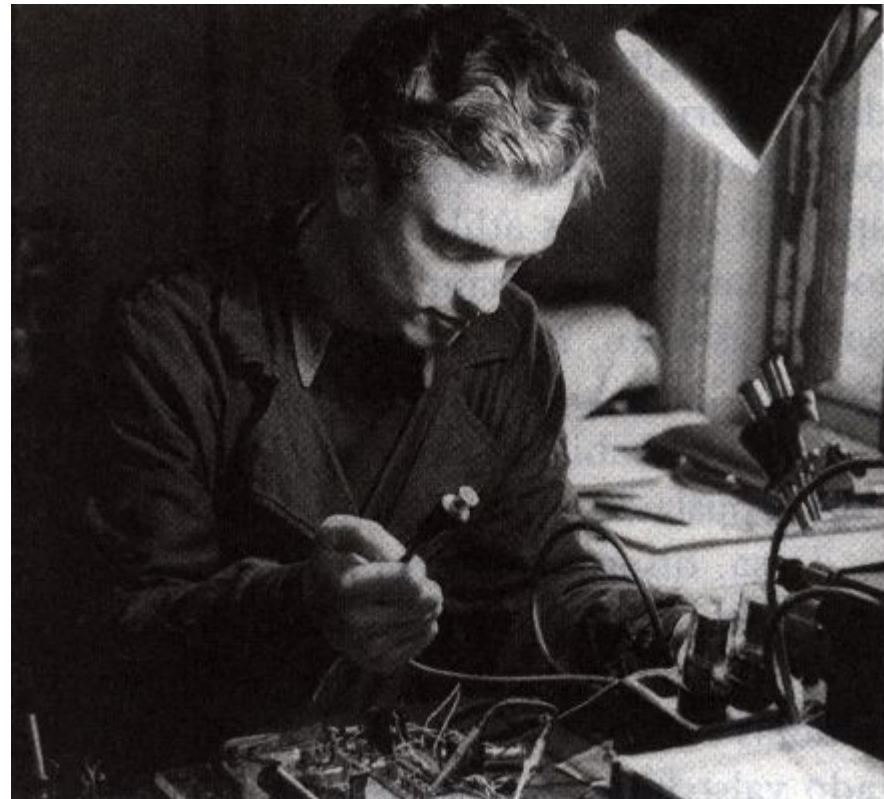




During Joseph Stalin's campaign against the so-called "rootless cosmopolitans" (Jews), in 1950 Ioffe was made redundant from his position of the Director of LPTI and from the Board of Directors. In 1952–1954 he headed the Laboratory of Semiconductors of Academy of Sciences of the USSR, which in 1954 was reorganized into Institute of Semiconductors.

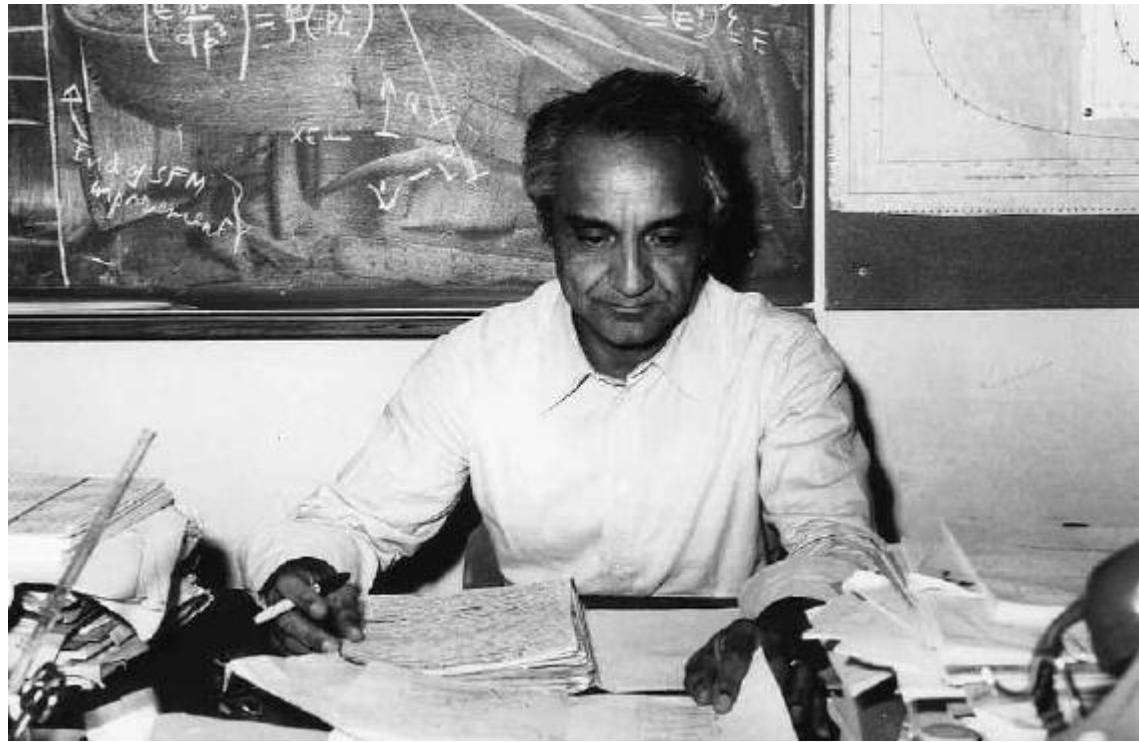


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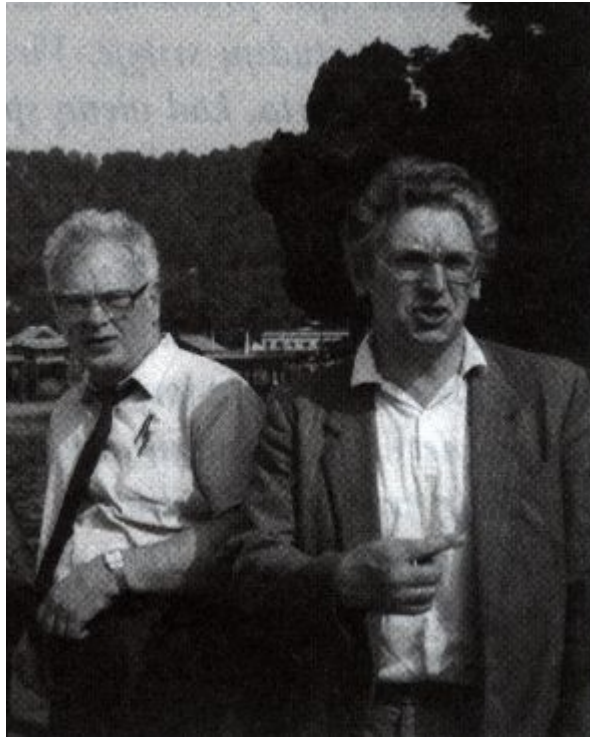
Juras Požela in Leningrad,
May 1955

Antonino Zichichi
Emeritus Professor at the University of Bologna,
former President of the European Physical Society,
Member of Pontifical Academy of Sciences,
researcher at **CERN**,
leader of the ICSC World Laboratory
endorsing science without secrets and borders

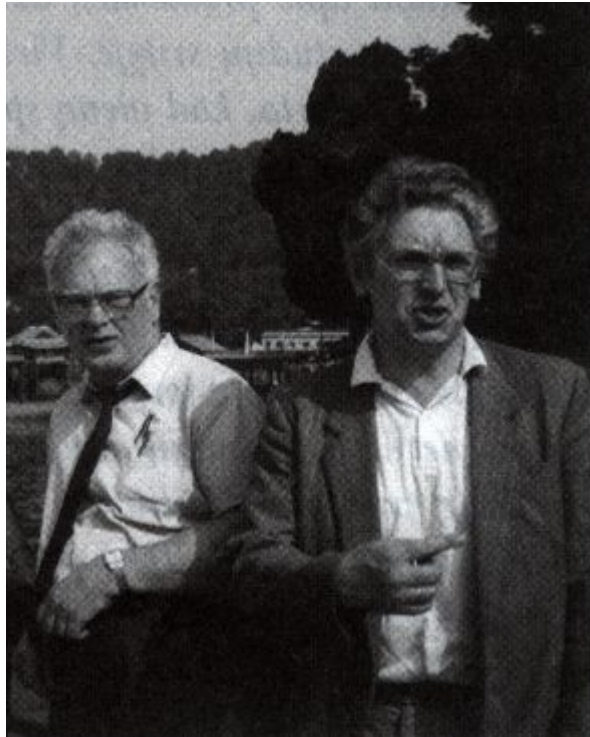




A. Zichichi congratulated at the Lithuanian Academy of Sciences (LAS) on his 80th birthday. From left: former LAS President J. Požela, A. Zichichi, acting LAS President Valdemaras Razumas, previous LAS President Zenonas Rokus Rudzikas. 2009.



Fragment of a photo: Juras Požela (left) and Juozas Vidmantis Vaitkus during a conference in People's Republic of China, 1990



Fragment of a photo: Juras Požela (left) and Juozas Vidmantis Vaitkus during a conference in People's Republic of China, 1990

J. V. Vaitkus recalls:

"J. Požela's team (V. Bareikis and A. Matulionis) were participating in CERN RD8 programme... I asked him to inform the participants at the workshop of this programme in Italy about our results on GaAs inhomogeneities research and parameters of defects... In several weeks a visit was paid by Prof. K. Pappo from Italy and Prof. K. Smith from Scotland... We became partners of this project, then in programmes supported by the Royal Society, and after accomplishing them we became engaged in the CERN RD39 and RD50 programmes."

Radiation hard semiconductor devices for very high luminosity colliders -
RD50: J. Vaitkus is a Deputy Chair of Collaboration Board since 2007

Cryogenic tracking detectors - RD39: development of super-radiation hard
cryogenic silicon detectors for applications of LHC experiments and their future
upgrades.

Eugenijus Gaubas, Vidas Kalesinskas and J. Vaitkus represent Vilnius
University there

Radiation hard semiconductor devices for very high luminosity colliders -
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~100 publications in RD50 & RD39

Traditional semiconductor device characterization techniques based on capacitance measurements using a small test signal, the different modifications of deep level transient spectroscopy etc. are limited if devices contain a large density of deep traps, exhibiting enhanced generation currents. In this book, a pulsed capacitance technique for barrier evaluation by linearly increasing voltage (BELIV) is presented. The basics of analysis of the current transients for reverse and forward biased junctions are described. The measurement schemes and regimes for profiling of dopant distribution, for thermo-emission and photo-ionization spectroscopy of traps, for the in situ control of radiation damage of particle detectors are discussed. Applications of this BELIV technique for characterization of multi-layered structures of homo- and hetero- junctions formed in fabrication of diode, particle detector, thyristor and solar-cell devices are demonstrated. The BELIV technique is shown to be a powerful tool for fast and comprehensive evaluation of the parameters of barrier structures.

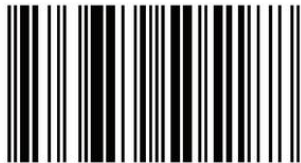


Eugenijus Gaubas
Tomas Ceponis
Juozas-Vidmantis Vaitkus

Eugenijus Gaubas

Eugenijus Gaubas, habil. dr., professor of Vilnius University, head of department at Institute of Applied Research, Vilnius University, Lithuania.
Tomas Čeponis, dr., senior researcher at Institute of Applied Research, Vilnius University, Lithuania. Juozas-Vidmantis Vaitkus, Dr.Sc., professor of Vilnius University, member of Lithuanian Acad. Sci.

Pulsed capacitance technique for evaluation of barrier structures



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Scintillators for future calorimeters - RD18 - Crystal Clear Collaboration:
Lithuanian authors Gintautas Tamulaitis, Artūras Žukauskas et al. published
~25 papers

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~25 papers

Lithuanian researchers were closely involved in the European Organisation for
Nuclear Research (CERN) programmes since 1990, which eventually resulted
in ...

CMS: The Compact Muon Solenoid: Letter of intent for a general purpose detector at the LHC

CMS Collaboration (M. Della Negra (CERN), M. Markytan, N. Neumeister, P. Porth, H. Rohringer, J. Strauss, F. Szoncoso, G. Walzel, C.E. Wulz (Vienna, OAW), J. Sacton, C. Vander Velde, P. Vilain, G. Wilquet, J. Lemonne, S. Tavernier, Walter Van Doninck, J. Wulleman (Brussels U., IHE), D. Favart, G. Gregoire (Louvain U.), E. De Wolf, F. Verbeure (Antwerp U.), E. Daubie, F. Grard, O. Pingot, R. Windmolders (UMH, Elem. Part. Phys.), N. Chekhlova, P. Kuzhir, A. Litomin, N. Shumeiko, D. Shvarkov, A. Soroko, P. Kuchinsky, V. Lomako, V. Petrov, V. Prosolovich (Belarus State U.), Yu. Kuchinsky, A. Kutilin, V. Rumyantsev, M. Sergeenko (Minsk, Inst. Phys.), V. Genchev, R. Traynov, P. Yaidzhiev (Sofiya, Inst. Nucl. Res.), A. Jordanov, L. Litov, R. Tsenov, V. Velev (Sofiya U.), A. Ainsaar, R. Agurajua, K. Engelbrecht, A. Hall, E. Lippmaa, J. Lippmaa, U. Mets, P. Piksarv, R. Pikver, J. Subbi, R. Teeaar, E. Uustalu, R. Villemson (NICPB, Tallinn), K. Gustafsson, A. Hentinen, K. Honkavaara, M. Huhtinen, J.P. Ikonen, P. Karhu, V. Karimaki, T. Karttaavi, H. Kettunen, K. Kurvinen, J. Kuuri, J. Lappalainen, R. Lauhakangas, J. Makela, M. Niemi, T. Oksakivi, R. Orava, M. Pimia, W. Roth, T. Schulman, S. Simonen, T. Sarne, T. Tuuva, O. Vertanen, M. Voutilainen (Helsinki U.), P.A. Aarnio, K. Ekman, A. Onnela, M. Salonen, J. Sell (Helsinki U. of Tech.), J. Hattula, R. Julin, V. Ruuskanen, J. Aysto (Jyvaskyla U.), J. Stalnacke, E. Suhonen (Oulu U.), R. Kinnunen, J. Tuominiemi (Helsinki U.), R. Brenner, K. Osterberg (Abo Akademi), D. Perret-Gallix, M. Schneegans, J.M. Thenard, J.P. Vialle (Annecy, LAPP), P. Antilogus, M. Bedjidian, D. Contardo, O. Drapier, H. El Mamouni, R. Haroutunian, B. Ille, D. Kryn, L. Mirabito, G. Smadja (Lyon, IPN), J. Badier, G. Bonneaud, A. Busata, P. Busson, C. Charlot, B. Chaurand, L. Dobrzynski, C. Dechandol, C. Gregory, A. Karar, L. Kluberg, C. Lemoine, P. Matricon, G. Morinaud, A. Romana, R. Tanaka (Ecole Polytechnique), J.M. Baze, H. Desportes, R. 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Dittmar, J.W. Gary, W. Gorn, C.C.H. Jui, J.G. Layter, B.C. Shen, Gordon J. VanDalen, G.W. Wilson (UC, Riverside), R. Aitov, A. Avezov, A. Gafarov, Yu. Koblik, D. Mirkarimov, V. Pirogov, R. Safarov, A. Urkenbaev, B. Yuldashev, K. Yunusov (Tashkent, IYF) [Hide](#)

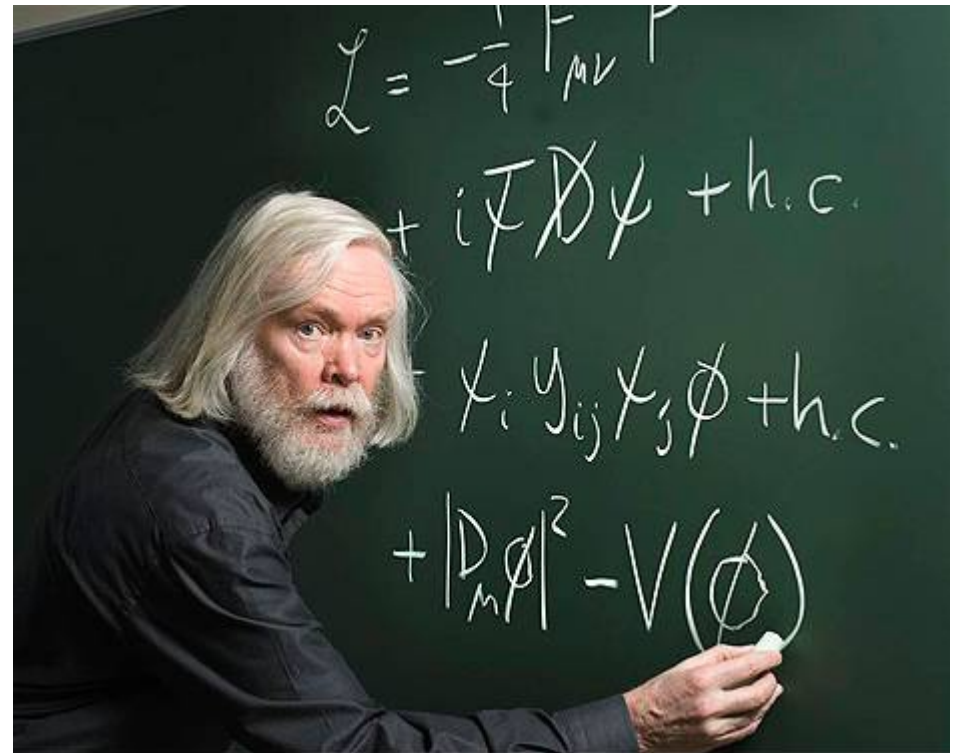
No, not agreement yet ... 7 Lithuanians signing CMS Lol, among 475 others, in 1992. <https://inspirehep.net/record/341521>



John Ellis FRS, Clerk
Maxwell Professor of
Theoretical Physics,
King's College in
London

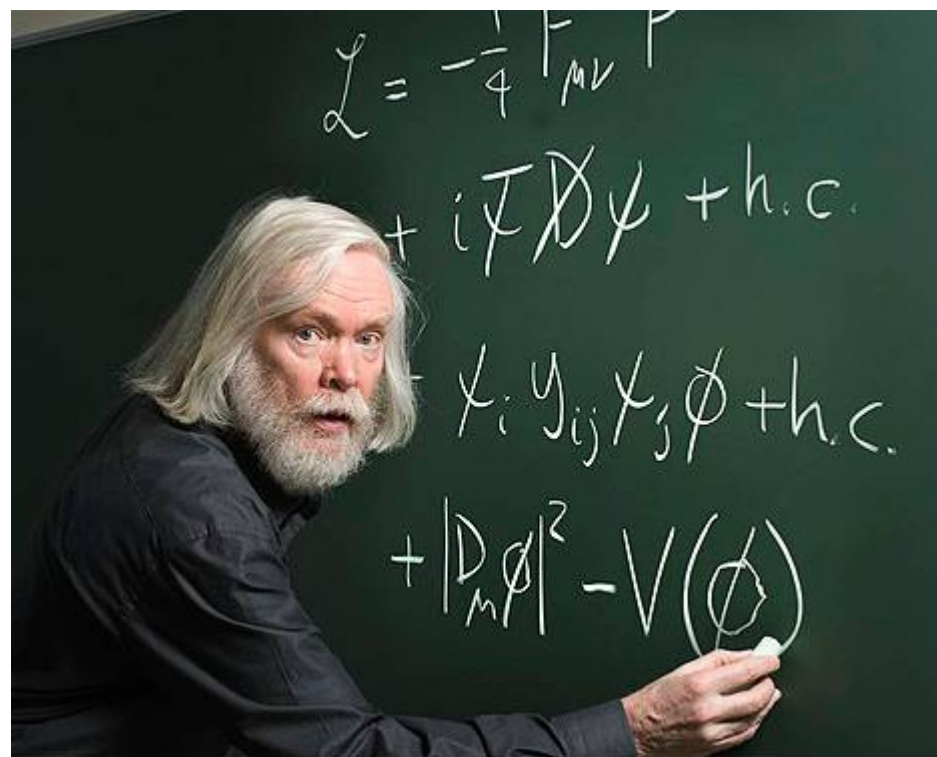


John Ellis FRS, Clerk Maxwell Professor of Theoretical Physics, King's College in London





John Ellis FRS, Clerk Maxwell Professor of Theoretical Physics, King's College in London



Guenakh Mitselmakher, Professor at Department of Physics, University of Florida



CO-OPERATION AGREEMENT
Between
**THE EUROPEAN ORGANIZATION FOR NUCLEAR
RESEARCH (CERN)**
And
**THE GOVERNMENT OF THE REPUBLIC
OF LITHUANIA**
Concerning
**The Further Development of Scientific and Technical
Co-operation in High-Energy Physics**
2004

Co-operation Agreement between the
Government of the Republic of Lithuania
and CERN in 2004.

Done at Geneva on 09 11 2004

In two copies in the English language and two copies in the Lithuanian language, it being understood that in case of ambiguity or contradiction, the former shall prevail.

For the Government
of the Republic of Lithuania

.....
Algirdas MONKEVICIUS
Minister of Education and Science

For the European Organization
for Nuclear Research

.....
Robert AYMAR
Director-General



Zenonas Rokus Rudzikas, President of the Lithuanian Academy of Sciences (left), and Robert Aymar, CERN Director General, sign the Protocol to the Co-Operation Agreement in Geneva, 22 November 2005.



At the LHC Inauguration, 21 October 2008. Left to right: Albertas Žalys, Director of the Science and Technology Department at the Ministry of Education and Science, Algimantas Juozapavičius, Vice-dean of the Faculty of Mathematics and Informatics at Vilnius University, Tapio Niinikoski, Adviser to the CERN Director General on the Relations with Non-member States, Algirdas Monkevičius, Minister of Education and Science of the Republic of Lithuania, Zenonas Rokus Rudzikas, President of the Lithuanian Academy of Sciences.

Close to 100 registered CERN users from Lithuanian institutions have already contributed to the high-energy particle physics experiments performed at CERN.

Close to 100 registered CERN users from Lithuanian institutions have already contributed to the high-energy particle physics experiments performed at CERN.

Vilnius University --- LITHUANIA - Vilnius

CMS INSTITUTE (Non Member State)

Code: VILNIUS-UNIV - Vilnius Univ., Vilnius

99 CMS Members including 21 scientists: 5 Physicist(s) 15 engineer(s) 1 graduate(s)
77 Undergraduate(s), 1 Administrative(s), 0 Technician(s)

All People ever registered at institute including non-CMS and ex-members



From right: Eugenijus Gaubas, PhD students Dovilė Meškauskaitė, Audrius Tekorius, Jevgenij Pavlov and Dr Tomas Čeponis. Photo by J. V. Vaitkus.

The team, while working in AIDA (Advanced Infrastructure for Detectors and Accelerators) project, produced a device with two functions - radiation monitoring and control of accelerator beam parameters. Its operation based on the linear dependence of silicon photoresponse rate on proton and neutron fluences in a wide range, an effect discovered by E. Gaubas.



From right: Eugenijus Gaubas, PhD students Dovilė Meškauskaitė, Audrius Tekorius, Jevgenij Pavlov and Dr Tomas Čeponis. Photo by J. V. Vaitkus.

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Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC[☆]

CMS Collaboration^{*}

CMS, <http://cms.cern.ch>

This paper is dedicated to the memory of our colleagues who worked on CMS but have since passed away. In recognition of their many contributions to the achievement of this observation.

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ABSTRACT

Results are presented from searches for the standard model Higgs boson in proton–proton collisions at $\sqrt{s} = 7$ and 8 TeV in the Compact Muon Solenoid experiment at the LHC, using data samples corresponding to integrated luminosities of up to 5.1 fb^{-1} at 7 TeV and 5.3 fb^{-1} at 8 TeV. The search is performed in five decay modes: $\gamma\gamma$, ZZ , WW , $\tau\tau$, and $b\bar{b}$. An excess of events is observed above the expected background, with a local significance of 5.0 standard deviations, at a mass near 125 GeV, signalling the production of a new particle. The expected significance for a standard model Higgs boson of that mass is 5.8 standard deviations. The excess is most significant in the two decay modes with the best mass resolution, $\gamma\gamma$ and ZZ ; a fit to these signals gives a mass of $125.3 \pm 0.4(\text{stat.}) \pm 0.5(\text{sys.})$ GeV. The decay to two photons indicates that the new particle is a boson with spin different from one.

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1. Introduction

The standard model (SM) of elementary particles provides a remarkably accurate description of results from many accelerator and non-accelerator based experiments. The SM comprises quarks and leptons as the building blocks of matter, and describes their interactions through the exchange of force carriers: the photon for electromagnetic interactions, the W and Z bosons for weak interactions, and the gluons for strong interactions. The electromagnetic and weak interactions are unified in the electroweak theory. Although the predictions of the SM have been extensively confirmed, the question of how the W and Z gauge bosons acquire mass whilst the photon remains massless is still open.

Nearly fifty years ago it was proposed [1–6] that spontaneous symmetry breaking in gauge theories could be achieved through the introduction of a scalar field. Applying this mechanism to the electroweak theory [7–9] through a complex scalar doublet field leads to the generation of the W and Z masses, and to the prediction of the existence of the SM Higgs boson (H). The scalar field also gives mass to the fundamental fermions through the Yukawa interaction. The mass m_H of the SM Higgs boson is not predicted by theory. However, general considerations [10–13] suggest that

m_H should be smaller than ~ 1 TeV, while precision electroweak measurements imply that $m_H < 152$ GeV at 95% confidence level (CL) [14]. Over the past twenty years, direct searches for the Higgs boson have been carried out at the LEP collider, leading to a lower bound of $m_H > 114.4$ GeV at 95% CL [15], and at the Tevatron proton–antiproton collider, excluding the mass range 162–166 GeV at 95% CL [16] and detecting an excess of events, recently reported in [17–19], in the range 120–135 GeV.

The discovery or exclusion of the SM Higgs boson is one of the primary scientific goals of the Large Hadron Collider (LHC) [20]. Previous direct searches at the LHC were based on data from proton–proton collisions corresponding to an integrated luminosity of 5 fb^{-1} collected at a centre-of-mass energy $\sqrt{s} = 7$ TeV. The CMS experiment excluded at 95% CL a range of masses from 127 to 800 GeV [21]. The ATLAS experiment excluded at 95% CL the ranges 111.4–116.6, 119.4–122.3 and 129.2–541 GeV [22]. Within the remaining allowed mass region, an excess of events near 125 GeV was reported by both experiments. In 2012 the proton–proton centre-of-mass energy was increased to 8 TeV and by the end of June an additional integrated luminosity of more than 5 fb^{-1} had been recorded by each of these experiments, thereby enhancing significantly the sensitivity of the search for the Higgs boson.

This Letter reports the results of a search for the SM Higgs boson using samples collected by the CMS experiment, comprising data recorded at $\sqrt{s} = 7$ and 8 TeV. The search is performed in

[☆] © CERN for the benefits of the CMS Collaboration.

^{*} E-mail address: cms-publications-coordinator@cern.ch.

Mindaugas Janulis,
Andrius Juodagalvis,
Rolandas Naujikas,
Aurelijus Rinkevičius,
Evaldas Juška,
Valdas Rapševičius

are among the CMS
Collaboration authors of
the Higgs particle
discovery paper published
in Phys. Lett. B

List of Compact Muon Solenoid Collaboration Achievement Awards conferred on Lithuanians

2009: **Valdas Rapševičius** (University of Florida, Vilnius University) for major contributions to the central DQM book keeping software

2013: **David Abdurachmanov** (Vilnius University) for his achievements in solving some of the exceptionally difficult problems in porting and migrating CMSSW software to new architectures and new versions of external products like ROOT, in addition to his years of service as a CMSSW release manager

2014: **Inga Bucinskaite** (University of Illinois at Chicago) for her outstanding contributions to trigger menu development, in particular for providing global trigger menu rate estimates for different beam energies and HLT menus, thereby enabling the development of balanced trigger menus for a variety of boundary conditions

2015: **Antanas Norkus** (Vilnius University) for his outstanding contribution to the Release Validation and Monte Carlo production in PPD

2015: **Evaldas Juška** (Fermilab) for his outstanding contribution over many years to the CSC online software including DCS and the CSC Expert System

CMS Awards 2009



During the years of 2013 to 2016, Permanent Representation of Lithuania to United Nations and other International Organizations in Geneva, represented by Ambassador **Rytis Paulauskas**, strongly supported by CERN leadership and scientists, continued to intensify the political and academic contacts between Lithuania and CERN. This intensive exchange of high-level visits to CERN and to Lithuania has facilitated formation of a critical mass of awareness within and beyond the scientific community in Lithuania. Lithuania's Associated Membership at CERN became a national strategic interest and political objective as expressed by official delegations of the President, high-ranking members of the Parliament and the Government of Lithuania.



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Delegations from the Republic of Lithuania to CERN, 2012-2016

20-29 May 2012

Raimondas Šukys, Minister, Ministry of Health

Viktoras Meižis, Head, Department of International Relations, Ministry of Health

19-20 May 2013

Vytenis Povilas Andriukaitis, Minister, Ministry of Health

Vilius Grabauskas, Executive Council Member, World Health Organisation

Kęstutis Miškinis, Head, Department of EU Affairs and International Relations, Ministry of Health

Simona Gailiūtė, Senior Specialist, Departments of EU Affairs and International Relations, Ministry of Health

27 September 2013

Šarūnas Birutis, Minister, Ministry of Culture

12-14 March 2014

Professor Dainius Pavalkis, Minister, Ministry of Education and Science

Professor Valdemaras Razumas, President, Lithuanian Academy of Sciences

Professor Juozas Vidmantas Vaitkus, Saulius Jursenas, DSc Habil, Andrius Bernotas, Dr Stanislovas Žurauskas

18-21 May 2014

Vytenis Povilas Andriukaitis, Minister, Ministry of Health

Kęstutis Miękinis, Head, Departments of EU Affairs and International Relations, Ministry of Health

Professor V.J. Grabauskas, Chancellor of the Medical Academy, Lithuanian University of Health Sciences

Simona Gailiūtė, Senior Specialist, Departments of EU Affairs and International Relations, Ministry of Health

Radvilė Jakaitienė, Senior Specialist, Departments of EU Affairs and International Relations, Ministry of Health

16-18 February 2014

Professor Dainius Pavalkis, Robertas Dargis

8 April 2015

Dr Svetlana Kauzonienė, Viceminister, Ministry of Education and Science

Professor Alfonsas Daniūinas, Rector, Vilnius Gediminas Technical University

Professor Asta Radzevičienė, Vice-Rector for International Relations, Vilnius Gediminas Technical University

Professor Nerija Žurauskienė, Deputy Director for Science, Center for Physical Sciences and Technology

Dr Arūnas Beržinskas, Head, International Programmes Division, Agency for Science, Innovation and Technology

Andrius Bernotas, Head, Department of Administration, Lithuanian Academy of Sciences

Sigitas Tamulevičius DSc Habil, Director, Institute of Materials Science, Kaunas University of Technology

17-21 May 2015

Rimantė Šalaševičiūtė, Minister, Ministry of Health

Professor V.J. Grabauskas, Chancellor of the Medical Academy, Lithuanian University of Health Sciences

Radvilė Jakaitienė, Senior Specialist, Departments of EU Affairs and International Relations, Ministry of Health Jurgita Kinderienė, Advisor to Minister of Health, Ministry of Health

8 July 2015

Professor Artūras Žukauskas, Rector, Vilnius University

Professor Rimantas Jankauskas, Pro-Rector, Vilnius University

Dr Linas Bukauskas, Vice-Dean, Faculty of Mathematics and informatics, Vilnius University

18-20 November 2015

Professor Dainius Pavalkis

30 November-2 December 2015

Dr Rimantas Vaitkus, Vice-Chancellor, Government of Lithuania

Professor Remigijus Žaliūnas, Rector, Lithuanian University of Health Sciences

Professor Petras Baršauskas, Rector, Kaunas University of Technology

Professor Vilius Grabauskas, Chancellor, Medical Academy, Lithuanian University of Health Sciences

Dr Asta Pudzienė, Pro-Rector for Science, Kaunas University of Technology

Professor Renaldas Jurkevičius, Director General, Kaunas Clinics, Hospital of Lithuanian University of Health Sciences

20 December 2015

Dr Dalia Grybauskaitė, President, Republic of Lithuania

Dr Saulė Mačiukaitė-Žvinienė, Advisor to the President on Education, Science and Culture

Renaldas Vaisbrodas, Senior Advisor to the President on Foreign Affairs

Lina Antanavičienė, Senior Advisor to the President on Economic and Social Policy

Professor Dr Juozas Vaitkus

29 February 2016
Linus Linkevičius, Minister, Ministry of Foreign Affairs

April 2016
Raimundas Paliukas, Chairman, Council for Education, Science and Culture, Parliament of Lithuania

24 May 2016
Juras Požela, Minister, Ministry of Health



New Protocol to the Agreement signed in 2014 in Vilnius

PROTOCOL P120

to

THE CO-OPERATION AGREEMENT
DATED 9 NOVEMBER 2004

between

THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA

and

THE EUROPEAN ORGANIZATION FOR NUCLEAR
RESEARCH (CERN)

concerning

Participation of Institutions of the Republic of Lithuania
in CERN's scientific programme

2014

ARTICLE 11

Signature

In consideration of the involvement of the Lithuanian Academy of Sciences in the execution of this Protocol, and to witness its agreement to the scope of the work it shall thereby undertake, the President of the Lithuanian Academy of Sciences shall add his signature to those of the authorized representatives of the Parties.

ARTICLE 12

2004 Co-operation Agreement

This Protocol shall form an integral part of the 2004 Co-operation Agreement, whose terms shall apply hereto insofar as this Protocol does not stipulate otherwise.

Done in Vilnius on 26 September 2014 in two copies in the Lithuanian language and two copies in the English language, it being understood that in case of ambiguity or contradiction the English version shall prevail.

For the Government of the
Republic of Lithuania


Prof. Darius PAVALKIS
Minister of Education and Science

For the European Organization
for Nuclear Research (CERN)


Prof. Rolf-Dieter HEUER
Director-General

For the Lithuanian Academy of Sciences


Prof. Valdemaras RAZUMAS
President

... with an updated list of Lithuanian institutions co-operating with CERN

Institutions of the Republic of Lithuania together with their declared interests in participating in the respective research areas as far as such information is already known at the time of the signature of this Protocol.

Institutions of the Republic of Lithuania

1. **LAS** Lithuanian Academy of Sciences
2. **FMI** Vilnius University (Faculty of Mathematics and Informatics)
3. **IAR** Vilnius University (Institute of Applied Research)
4. **ITPA** Vilnius University (Institute of Theoretical Physics and Astronomy)
5. **FP** Vilnius University (Faculty of Physics)
6. **KUT** Kaunas University of Technology
7. **CPST** Center for Physical Sciences and Technology
8. **VG TU** Vilnius Gediminas Technical University
9. **LUHS** Lithuanian University of Health Sciences.

Lithuanian delegations start visiting CERN under National high school teacher programme ...



Viceminister of Education and Science of the Republic of Lithuania Dr Svetlana Kauzonienė comes to CERN and arranges for virtually impossible -

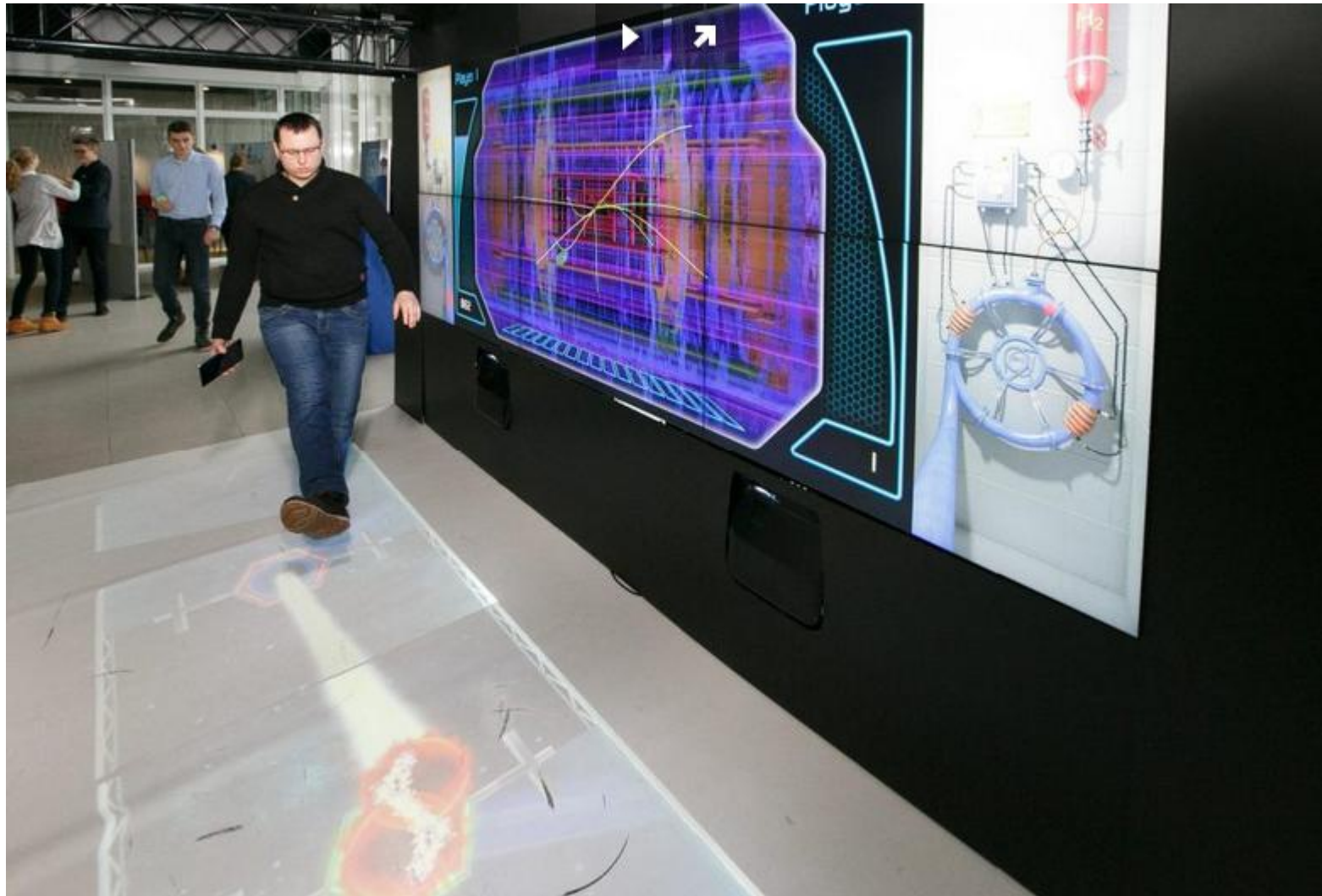


three CERN travelling exhibitions to be displayed in Lithuania, in the same year 2016:



„Accelerating Science“, displayed in March-July at a brand new National Center for Physical Sciences and Technology in Vilnius, which attracted over 10,000 visitors

„Interactive LHC Tunnel“ and „CERN in images“, demonstrated on February 4-6 at LITEXPO exhibition „Studijos 2016“ (Vilnius) and later in Kaunas „Santaka“ valley for science, in Vilnius exhibition „Mokykla 2016“ in November.



CERN Director General R. Heuer comes to Vilnius on the eve of CERN 60th anniversary, and together with Prof. V. Razumas first pays a visit to the President of the Republic of Lithuania Dalia Grybauskaitė ...



And later Prof. R. Heuer visits the Lithuanian Academy of Sciences and meets with the community of researchers and policy makers there:



The President of the Republic of Lithuania Dalia Grybauskaitė visits CERN on 20 January 2016, participates in a virtual tour of CERN by Lithuanian schoolchildren who see and hear her remotely from various locations, meets with the new CERN Director General Fabiola Gianotti and the Lithuanians at CERN



Lithuanians at CERN prepared a declaration „Ready for CERN“ for the occasion, pointing out:

‘READY FOR CERN’: VIEWS FROM THE LITHUANIANS AT CERN JANUARY 2016

Support of Lithuania’s application for membership at CERN

1. Lithuanian scientific community at CERN fully supports Lithuania’s application for the Associate membership at CERN and is committed to assist during this process.

World-class research

2. Participation in Nobel Prize-winning experiments conducted at CERN would enhance Lithuania’s position among leading nations in science and give Lithuanian research institutions international visibility and recognition. CERN’s R&D programs would utilize Lithuanian scientific knowledge, specialist experience, and continuously upgraded research instruments and facilities in Lithuania more effectively.

Decades-long participation and recognition at CERN

3. In the past few decades over 100 Lithuanians have already partaken in CERN activities, including training, research, software development, and innovation. Some Lithuanian inventions have already been applied or are further tested at CERN, e.g. devices for radiation monitoring and proton beam imaging, the remote measurements of semiconductors and detectors during irradiation by proton and neutron beam, including in cryogenic conditions. Lithuanian contribution has recently produced three CMS Achievement Awards.

From Lithuanian ‘Brain Drain to Brain Gain’

4. Currently, half of Lithuanian researchers at CERN are already not affiliated with Lithuanian institutions. Lithuania’s associate membership, combined with the national expatriate reintegration strategy, would generate a strong incentive for them to transfer their knowledge, apply their experience, and use their connections in Lithuanian education and industrial sectors.

Advanced training and science education

5. Associate membership would profoundly stimulate education of science, technology, engineering and mathematics (STEM) in Lithuania, in general, and particle physics, in particular. CERN’s programmes have already facilitated training of Lithuanian teachers, who have been disseminating their acquired knowledge in secondary education, which, in turn, is nurturing a new generation of researchers. Enhancement of school curriculum by adding particle physics is needed.

Industrial procurement and innovation opportunities

6. Being an Associate Member would further augment knowledge transfer, energise cross-industry collaboration and innovation, and open up more industrial procurement opportunities in Lithuania. Lithuanian companies would be eligible to bid for CERN’s contracts and apply its know-how in logistics, automotive, laser technologies, big data analytics, finance, medicine, and start-ups.

Employment prospects

7. Being an Associate Member would make Lithuanian nationals eligible for fellow and staff positions at CERN, in addition to CERN-funded PhD positions for Lithuanian students.

CERN and Lithuania: to the future together

8. Recognising interconnected nature of scientific progress, Lithuanian community at CERN thinks that associate membership will augment Lithuania’s significant and valuable contributions. CERN will continue to raise its profile and appeal in Lithuania through outreach programmes, education system, research and industrial projects and, in turn, attract more talent from Lithuania. Energetic cooperation between various stakeholders in government, business, academia and civil society domestically is essential to ensure that Lithuania’s membership application process is successful.

Lithuanians at CERN
Geneva, Switzerland
20 January 2016

Mr David Abdurachmanov, Fermilab, CMS Collaboration Award 2013 (Vilnius University)
Mr Justas Balčas, Caltech, CMS Collaboration
Mr Dmitrijus Bugelskis, Vilnius University, CMS Collaboration
Mr Mindaugas Jankulis, Vilnius University, CMS Collaboration
Mr Adomas Jelinskas, University of Warwick, ATLAS Collaboration
Mr Evaldas Juška, Texas A&M University, CMS Collaboration Award 2015
Mr Audrius Mečionis, Vilnius University, CMS Collaboration
Mr Antanas Norkus, Vilnius University, CMS Collaboration Award 2015
Dr Vaidas Rapševičius, Fermilab, CMS Collaboration
Dr Aurelijus Rinkevicius, Cornell University, CMS Collaboration
Dr Dainius Simelevičius, Vilnius University, CMS Collaboration
Mr Mantas Stankevičius, Fermilab, CMS Collaboration
Professor Juozas Vaitkus, Vilnius University, RD50 Collaboration Board Deputy Chair & CMS Collaboration

Support of Lithuania’s application for membership at CERN

World-class research

Decades-long participation and recognition at CERN

From Lithuanian ‘Brain Drain to Brain Gain’

Advanced training and science education

Industrial procurement and innovation opportunities

Employment prospects

CERN and Lithuania: to the future together

The proper application for the Associate Member status was prepared and submitted, with a letter from the Prime Minister of the Republic of Lithuania Algirdas Butkevičius

With this letter, I would also like to assure you that the Government of Lithuania as well as national state and academic institutions stand ready to further enhance cooperation with the CERN Council, CERN Director-General and CERN management. Furthermore, let me inform you that high-level Government officials would be ready to present the Application to the CERN members at the upcoming CERN Council Session.

Yours sincerely,

Algirdas Butkevičius

A handwritten signature in black ink, appearing to read 'Butkevičius', written in a cursive style.

The application has been considered and a reply sent to Lithuania:

In particular, the Council noted the conclusions reached by the Task Force, namely that, on the one hand, criterion (a) for Associate Membership, relating to the need for an adequately funded solid basis in elementary particle physics, both theoretical and experimental, was partially fulfilled, and, on the other hand, the Lithuanian authorities have made a firm commitment to complete the experimental particle physics basis in their country by establishing a Chair of nuclear and experimental particle physics research at Vilnius University.

...

Subject to the foregoing, I look forward to converging on Lithuania's annual financial contribution and to receiving confirmation of your approval of the attached draft Associate Member Agreement in the near future.

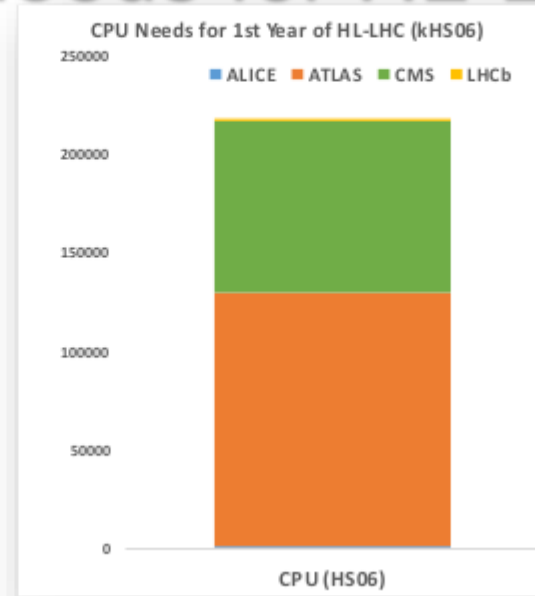
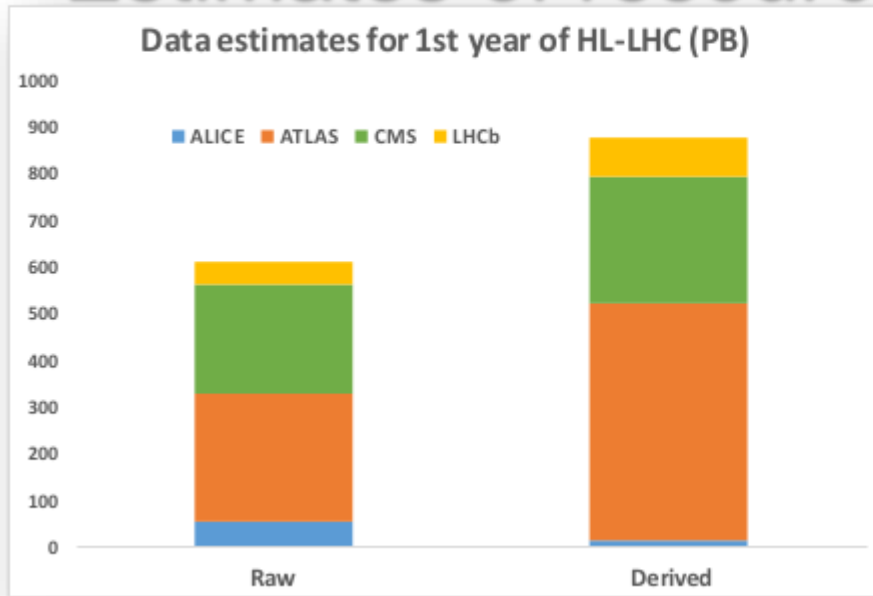
I should like to take this opportunity to thank you for your excellent collaboration and invaluable support, and I send you my best personal regards.

Yours sincerely,



Fabiola Gianotti
Director-General

Estimates of resource needs for HL-LHC



Data:

- Raw 2016: 50 PB → 2027: 600 PB
- Derived (1 copy): 2016: 80 PB → 2027: 900 PB

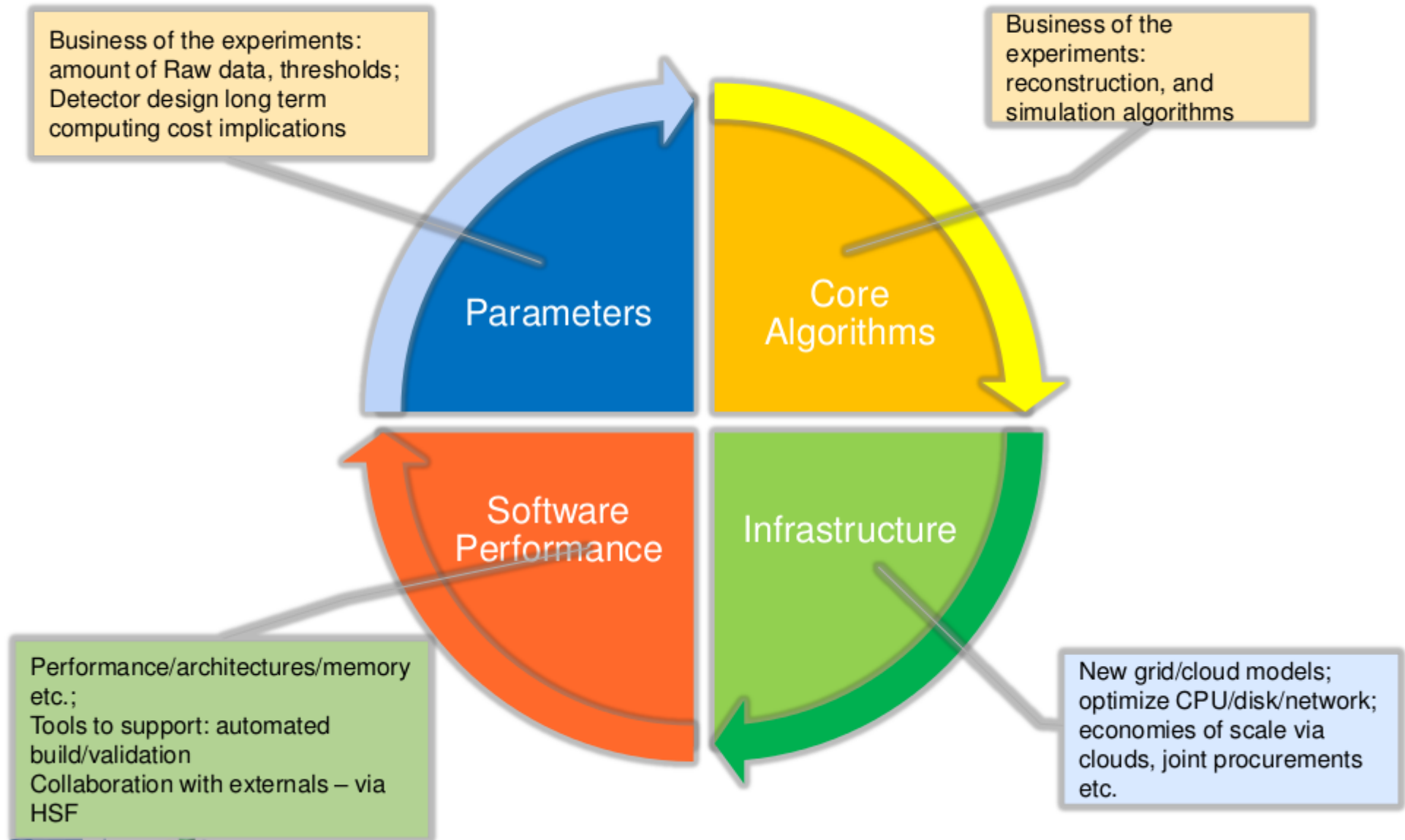
CPU:

- x60 from 2016

Technology at ~20%/year will bring x6-10 in 10-11 years

- Simple model based on today's computing models, but with expected HL-LHC operating parameters (pile-up, trigger rates, etc.)
- At least x10 above what is realistic to expect from technology with reasonably constant cost

HL-LHC computing cost parameters





CERN-HI-5201001

1952: The first meeting of the provisional CERN Council on 15 February 1952, with key people including Sir Ben Lockspeiser, Edoardo Amaldi, Felix Bloch, **Lew Kowarski**, Cornelis Bakker and Niels Bohr (at the back).

Following the Bolshevik Revolution, when Lew was 12 years old, his family fled west under adventurous circumstances and settled in **Vilnius** (then in Poland).

Alex Montwill

Ireland's best-known particle physicist

Born in Latvia, Alex moved with his family as child first to **Lithuania** and then to Ireland. A brilliant student he came to University College Dublin on a scholarship and became one of the first Irish scientists to work at CERN in the late 1950's.

From about that time onwards he was head of the Fundamental Particle research group at UCD which later became a member of the European Nuclear Emulsion Collaboration. The collaboration carried out extensive studies in hypernuclear physics and subsequently made the first observation of the creation and decay of a particle containing a **charmed quark**.



