60th ANNIVERSARY OF THE BUDKER INSTITUTE OF NUCLEAR PHYSICS (BINP), SB RAS

100th ANNIVERSARY OF THE BIRTH OF G I BUDKER

We are sixty!

The Budker Institute of Nuclear Physics, Siberian Branch of the Russian Academy of Sciences (BINP, SB RAS), was set up in pursuance of a resolution of the USSR Council of Ministers in May 1958 by re-designating the Laboratory of New Acceleration Methods of the Institute of Atomic Energy, Moscow, headed by Igor Vasil'evih Kurchatov.

The organizer and first director of the new institute was academician Gersh Itskovich Budker (1958–1977). After his death, academician Aleksandr Nikolaevich Skrinsky was appointed director of BINP SB RAS and held this position from 1977 till 2015. He retired in 2015 to become an scientific advisor to the institute and was succeeded as director by academician Pavel Vladimirovich Logachev.



Extracts from the resolution of the Presidium of the USSR Academy of Sciences No. 448 dated June 7, 1957 authorizing the establishment and building of the Institute of Nuclear Physics in the city of Novosibirsk and of the general meeting of the USSR Academy of sciences that elected G I Budker director of the institute (November 2, 1957).

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Signing of documents establishing the Institute of Nuclear Physics, Siberian Branch of the USSR Academy of Sciences. Standing are academician Gersh Itskovich Budker, the first director of INP SB RAS, (left) and academician Igor Vasil'evih Kurchatov, the head of the Soviet Union's Atomic project.

БИШИСКА из Постановления Президнума Академии маук СССР 19469 от 21 июня 1957 года
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Люстановления Президкума М. ОССР'от 7.91.1957. и 446 к созданию и огроительству в научном городие Сибирокого от- доления Академии наук СССР научных институтов:
Института ядерной физики:
I. Протонени кольцевой ускоритель с сильной фокусировкой на энергию протонов 50 или более млрд электроновольт. На этом ускорителе могут бить получены мощене пучки ангипротонов и ти- перонов и в соответствии с этим изучено взаимодействие раз- личных частиц високой энергия.
2. Электронный циклический ускоритель на энергию 5 млрд. электроновольт. С помощью этого ускорителя молет бить изучена структура ядер и нуклонов.
3. Оклызоточный ликейный ускоритель протонов. Такой уско- ритель может быть конслазован как монный тенератор найтронов /для наработки изотопов и рядя коследований; он может также обеспечить получение траноўреновых элементов и маучение раз- личных длорных реакций /на концарця-дарах, подбарьерных и т.п./
б/ Проведение научно-исоледовательских работ на ускорителе.
П.п. Президент Академии наук СССР академик А.П.Несмеянов
Главний ученый секретарь Президиума Академии наук СССР СПРИНИТ А.В.Тоцинев
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Extract from the resolution of the Presidium of the USSR Academy of Sciences No. 469 dated June 21, 1957 listing experimental facilities to be installed and areas of research to be conducted at INP.

Academician Gersh Itskovich Budker (01.05.1918–04.07.1977)





Many specialists and university students selected and invited personally by G I Budker to join the staff of the institute who formed the basis of its research potential during the period from 1958 to 1963 became in the course of time full and corresponding members of the Russian Academy of Sciences, including but not limited to L M Barkov, S T Belyaev, E P Kruglyakov, Yu E Nesterikhin, R Z Sagdeev, A N Skrinsky, B V Chirikov, V M Galitsky, G I Dimov, I N Meshkov, A A Naumov, V A Sidorov, and I B Khriplovich.

Today, the Budker Institute of Nuclear Physics is the biggest research institution of the Russian Academy of Sciences, having a staff of more than 2,800, including 550 research scientists (5 full members and 5 corresponding members of the Russian Academy of Sciences, over 60 doctorate holders, and 160 candidates of sciences). Large-scale experiments carried out at BINP SB RAS make use of the VEPP-2000 electron-positron collider with KMD-3 and SND detectors, the VEPP-4M collider facility equipped with a KEDR detector, and the unique facility of open plasma traps (GOL-3) and gas-dynamic (GDL) plasms traps, high-intensity X-ray synchrotron radiation beams, and the powerful teraherz free-electron laser. Most research projects being implemented at BINP SB RAS are unparalleled in this country.

A distinctive feature of the BINP SB RAS structure is a large engineering department with a staff of almost 100 specialists and an experimental production department (over 700 employees) provided with up-to-date technical equipment and technological machinery.



Scientists from BINP SB RAS, members of the Russian Academy of Sciences. Sitting from left to right are full RAS members Nikolai Sergeevich Dikansky, Gennadii Nikolaevich Kulipanov, Pavel Vladimirovich Logachev, Aleksandr Nikolaevich Skrinsky, Vasilii Vasil'evich Parkhomchuk. Standing left to right are RAS corresponding members Viktor Sergeevich Fadin, Yurii Mikhailovich Shatunov, Nikolai Aleksandrovich Vinokurov, Yurii Abatol'evich Tikhonov, Aleksandr Evgen'evich Bondar' (2017).



Meeting of BINP Scientific Council at the famous round table.

BINP SB RAS does active work for the training of toplevel researchers and engineering and technical specialists with excellent qualifications. It provides a base for six departments of the Physical Faculty of Novosibirsk State University (NSU) and Physico-Technical Faculty of Novosibirsk State Technical University (NSTU). Almost 200 students from both universities attend courses of lectures and take up a traineeship in laboratories of BINP SB RAS starting from their third term. About 60 doctoral candidates pursue postgraduate training programs based at BINP SB RAS, NSU, and NSTU. Practically all the actual heads of research departments of BINP SB RAS joined it when they were students at Novosibirsk universities.

Many former students, trainees, and doctoral candidates at BINP SB RAS became full or corresponding members of the Russian Academy of Sciences: A A Galeev, V E Zakharov, N S Dikansky, G N Kulipanov, P V Logachev, V V Parkhomchuk, A M Shalagin, A M Fridman, V E Balakin, A E Bondar', N A Vinokurov, Yu A Tikhonov, V S Fadin, and Yu M Shatunov, to name but a few. Some of them took over the directorship of leading physical institutions of Russia.

The Budker Institute of Nuclear Physics, the biggest research institution of the Russian Academy of Sciences, founded in the early 1950s, grew out of the Laboratory of New Acceleration Methods, Institute of Atomic Energy.

The scope of fundamental research, the style and organization, as well as interpersonal relations among the institute's staff members have been formed over more than half a century, but the basis for them had been laid in the very first years after its foundation, in the first place owing to the efforts of academician G I Budker, the founder and first director of BINP SB RAS. Life does not stand still; the decade of 1980–1990 witnessed great changes both inside and outside the institute; they continue to happen, but the core values underlying the life and work of BINP SB RAS remain unaltered.

Although BINP SB RAS has been designed to carry out fundamental studies, its research staff consists of fewer than 600 scientists of the more than 3,000 people employed here. The highest priority is given to the target-oriented solution of scientific problems, an important fact determining personnel relations. Despite a variety of scientific interests and views of life, we are unanimous in seeking a common goal and working as an integral community of scientists, research and development engineers, laboratory assistants, and workers. Certainly, it is not always possible to avoid conflict situations in such a heterogeneous collective of theorists, applied researchers, and technicians. Conscious efforts are needed to remove 'walls' that tend to grow between research teams affiliated with separate departments and that disjoin science topics.

Our common lifetime project is basic research aimed at gaining totally new knowledge to bridge still existing gaps in understanding various natural phenomena. Fundamental investigations are vitally important for further progress and the very existence of humankind, as well as for the evaluation of prospects for advances in the near and distant future. The modern understanding of the physical world picture is altogether different from what it was 50-60 years ago. The same is true of the scope and objectives of basic research as exemplified by the development of the colliding beam technique. Studies with the use of this method greatly contributed to the formation of the current worldview and are highly appreciated by the global scientific community. Fundamental science has neither frontier nor nationality. Basic studies are always at the forefront of science, even if within its small sector for the time being. It is breakthrough results that open up prospects for further work and justify the efforts of researchers.

Acquisition of new knowledge is the realm of just a few. 'Natural selection' puts forward those interested in the world structure and constitution of matter, e.g., dark matter. To make an appreciable contribution to fundamental studies, one must have peculiar personality traits and mental makeup, besides endowments and skills needed in any enterprise.



First-phase commissioning of the VEPP-5 electron-positron accelerator facility (VEPP-5 injection facility) on December 18, 2015). Cutting the ribbon in front from left to right are A E Lokot', mayor of the city of Novosibirsk; V F Gorodetsky, governor of Novosibirsk region, M M Kotyukov, head of Federal Agency of Research Organizations (FANO), and P V Logachev, director of BINP.

Our fundamental studies yield a large amount of previously unavailable data of value for various applications that we widely use to meet current challenges facing this nation and humankind at large. This practice dates back to the 1960s, when G I Budker obtained the government's permission to sell products of our applied innovative technologies and experimental facilities at an agreed-upon price both in this country and abroad. This is a routine practice today, but in the late 1980s BINP SB RAS was referred to in the academic community as nothing short of 'an island of capitalism in the socialist ocean'.

Life confirmed the practicability of such an approach, and we do our best to maintain and continue it: applied studies and contract work remain very important activities of the Institute. They are needed not only as a funding source but also because they help to create a more positive work environment inside the institute and improve the attitude of outsiders (scientific community, civil society, political authorities, etc.) toward its work. Both fundamental and applied studies are the constituent components integrated into an organic whole to mutually fertilize each other: the former by generating ideas and yielding new data, the latter by bringing financial means and introducing technological innovations. Such an organization does not exclude a degree of specialization: some workers are wholly involved in basic research, while others are mostly engaged in applied studies and contract work. Nevertheless, all work to achieve a common goal; it is an indispensable prerequisite for the successful work and the very existence of the institute. Had separate laboratories attempted to survive alone, they would in all probability have come apart at the seams, as was the fate that befell many other institutes. Taking advantage of the experience of the past 60 years, we can plan our work for the coming decade. We managed, under extremely difficult conditions, to continue our traditional research in such

advanced branches of science as elementary particle physics, accelerators, and controlled thermonuclear fusion; moreover, totally new investigations were initiated and successfully developed based on synchrotron radiation sources and free electron lasers. Further research plans are being developed, taking into consideration current global trends and prospects.

Theoretical physics, especially elementary particle physics and related cosmology, seeks new basic knowledge that may have long-term effects on the destiny of humankind. However, the views of individuals change much more rapidly than basic principles underlying the development of human civilization. At present, fundamental science if far less popular than it used to be some forty years ago. However, the slump in basic studies by no means affected their significance. They must be continued regardless of ever fluctuating public opinion.

It is hoped that our basic values heralded sixty years ago in regard to planning and organizing scientific research will remain memorable infinitely long.

The 60th anniversary of the institute is certainly a landmark event. But our children and certainly grandchildren are sure to commemorate its 100th anniversary. It depends on all of us what institute they will inherit in 40 years.

Congratulations on the occasion of the 60th anniversary of BINP SB RAS, good health, and every success to all of us!

Pavel Vladimirovich Logachev, director of BINP SB RAS Aleksandr Nikolaevich Skrinsky, scientific advisor for BINP SB RAS