

## Aleksandr Evgenievich Bondar (on his 60th birthday)

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May 27, 2015 is the 60th birthday of Aleksandr Evgenievich Bondar, the well-known scientist and outstanding experimental physicist, a Corresponding Member of Russian Academy of Sciences (RAS), and deputy director and head of laboratory at the Budker Institute of Nuclear Physics of Siberian Branch (SB) RAS, whose life has been associated with elementary particle and accelerator physics.

A E Bondar started work at the Institute of Nuclear Physics, SB RAS in 1973 when he was a student at Novosibirsk State University (NSU) and continued working at the Institute upon graduating from NSU in 1977. Here, he immediately started working on the development of the proportional chamber technique with signal pick-off with delay lines. With the active participation of A E Bondar, this work resulted in reaching a record spatial resolution of nearly 20  $\mu\text{m}$  and developing the MD-1 scattered electron detection system. At the same time, A E Bondar has been actively engaged in solving various problems associated with a facility with electron–positron colliding beams (VEPP-4) and made a significant contribution to the elaboration of beam polarization measurement techniques using synchrotron radiation.

A E Bondar's scientific biography is closely related to the study of two-photon hadron production processes. He has significantly contributed to the measurement of two-photon widths of various hadron resonances and of the total two-photon hadron production cross section exploiting the MD-1 detector at VEPP-4. These experiments allowed the determination of fundamental physical parameters, namely, two-photon coupling constants, whose comparison with the theoretical predictions gave an important boost to progress of the strong interaction theory, i.e., quantum chromodynamics (QCD). Further on, Aleksandr Evgenievich was one of the leaders in designing a unique two-photon system for scattered electron detection. The construction of the system has now been accomplished: it is installed at the VEPP-4 electron–positron collider and is being involved in experiments with the KEDR detector.

From 1990 to 2000, A E Bondar devoted much time to experiments with the CMD-2 magnetic detector at the VEPP-2M electron–positron collider at the Budker Institute of Nuclear Physics, SB RAS. The main goal of these experiments was precision measurements of hadron production cross sections in the range below 1.4 GeV. This allowed a high-precision determination of the contribution from hadron polarization of vacuum to the magnitude of the muon anomalous magnetic moment. One of the brilliant results of these experiments, obtained with the decisive participation of Aleksandr Evgenievich, was the first observa-



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tion of a  $\phi$ -meson decay to the  $\eta'\gamma$  state. This decay had been predicted theoretically long before, but had not been observed because of the low probability and the large background from other  $\phi$ -meson decays.

In the early 1990s, A E Bondar joined the work of the international Belle Collaboration, which was aimed at the design of a modern multipurpose detector and carrying out experiments at the KEKB electron–positron collider (KEK, Japan) with the highest luminosity in the world. The main task of these experiments was to observe  $CP$ -parity violation in B-meson decays. The team of BINP physicists headed by Aleksandr Evgenievich made a great contribution to the creation of an electromagnetic calorimeter based on scintillation CsI crystals. The work on the design and construction of the calorimeter containing about 9000 crystals with a total weight of 40 tons required strenuous efforts by the Novosibirsk team and was successfully accomplished in due time. The design parameters were attained soon after the calorimeter had been mounted in the detector in 1998. The calorimeter operated in the experiment without failure from 1999 to 2010 and fostered the success of the whole Belle experiment.

The heavy quark physics studied in the Belle experiment took the leading position in investigations made by the Novosibirsk team headed by A E Bondar. Among the numerous scientific results in this field, one should specially mention the model-independent method of finding the parameters of the Cabibbo–Kobayashi–Maskawa triangle, which are the fundamental parameters of the Standard Model, and the discovery of new exotic states of heavy bottomonium and a detailed exploration of their properties. The invaluable experience and knowledge gained in the Belle experiment allowed the Novosibirsk group to join organically studies of the heavy-quark physics in proton–proton collisions at the Large Hadron Collider (LHC), which have been carried out by the large international LHCb Collaboration at CERN since 2009.

A E Bondar represents the Institute actively and productively in Russia and abroad. He has repeatedly delivered brilliant discourses at different scientific forums and is constantly on the organizing committee of numerous conferences in our country and abroad. From 1996 to 2006, he was a member of the Detector Research and Development Committee (DRDC) at CERN; from 2002 to 2010, chair of the executive committee of the international Belle Collaboration; from 2006 to 2012, a member of the Scientific Policy Committee (SPC) of CERN, and since 2012 he has been a member of the International Committee for Future Accelerators (ICFA). Since 2012, Aleksandr Evgenievich has been on the Scientific Council under the Ministry of Education and Science of the Russian Federation. He is a member of the editorial boards of the journals *Yadernaya Fizika* and *Uspekhi Fizicheskikh Nauk*.

Aleksandr Evgenievich's profound knowledge of and interest in physics, together with his organizational talent, have always attracted young scientists to him. A E Bondar has been teaching at Novosibirsk State University for over 30 years, is a Professor at the Accelerator Physics Chair, and since 2010 has served as Dean of the Department of Physics at NSU. Six PhD theses in physics have been presented under the scientific guidance of A E Bondar. His active participation in the popularization of scientific knowledge and bold initiative in work with schoolchildren and students attract many talented young people to NSU and BINP.

With all our hearts, we wish Aleksandr Evgenievich Bondar all the best on his 60th birthday and wish him further success in his creative activities.

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