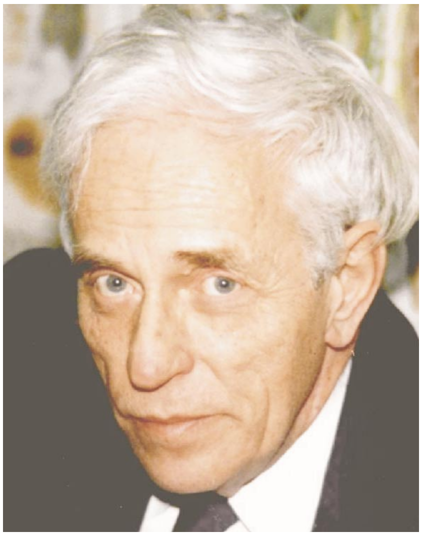

ALEKSANDR EVGENIEVICH CHUDAKOV

of Earth's outer radiation belt. Half a year before, James Van Allen had discovered the inner radiation belt with the Explorer 1 satellite. We have heard more than once that a joint Nobel Prize should have been awarded for the discovery of radiation belts, which is a good example of peaceful competition in space research.

In 1959, Chudakov constructed a big Čerenkov detector containing 100 tons of water; that detector can be considered an early ancestor of giant modern water Čerenkov detectors such as Super Kamiokande.

In a 1961 paper by one of us (Zatsepin) and Chudakov, we suggested the method of Čerenkov gamma-ray astronomy, which subsequently developed into a new branch of astronomy. Chudakov and his collaborators immediately implemented this method in a pioneering experiment at Katsively, Crimea, where the first gamma-ray telescope was constructed. The experiment was finished in 1963, with a negative result: No celestial sources with significant signal were discovered, and only upper limits of gamma rays with an energy of approximately 1 TeV were measured for investigated objects. Nevertheless, the result was quite important because it provided proof of the direct acceleration of electrons in the Crab Nebula.

Beginning in 1963, Chudakov was fully involved in the creation of the Baksan Neutrino Observatory in the Caucasus. The Baksan underground scintillation telescope began operation in 1978. Chudakov supervised the entire process, from the general philosophy of experiments to minute details of construction. The Baksan telescope was one of the first large multipurpose facilities for underground physics, and a handful of first-class results in the fields of elementary particle physics, physics of cosmic rays, and neutrino astrophysics were obtained with this instrument, which is still in operation.

Consider, though, that all these Herculean labors were accomplished under numerous bureaucratic restrictions and the continued economic inefficiency of the late Soviet state. Many things were self-made, which was a welcome challenge for Chudakov, whose ability to construct a homemade object was legendary. For example, he manufactured a powerful pulsed x-ray source of his own design in order to calibrate many detectors at one time. He prepared a cheap liquid scintillator, which was produced on a semi-industrial scale given that the Baksan telescope contained 330 tons of this scintillator. Earlier, he had designed a high-precision digital barometer, an instrument for measuring the density of tracks in nuclear emulsions, and so on. At the end of the 1940s, he first applied in his rocket experiments the amplitude-time-code conversion, which later became commonly used.

Chudakov's research activities were highly esteemed in his country and were internationally recognized. He was elected academician (1987) and a member of the Presidium of the Russian Academy of Sciences (1990). From 1983 until the end of his life, he headed the Council on Cosmic Rays in the academy. Chudakov was chairman of the Cosmic Ray Commission of the International Union of Pure and Applied Physics (1984–87).

Chudakov's family name in Russian originates etymologically from a word meaning "queer fish." This is a rare example of perfect harmony between a man and his name: Chudakov was a bright personality, but, nevertheless, was a scientist par excellence—a queer fish.

He was not involved in politics, but his life ran strangely parallel to the historical process around him. As a brilliant young scientist, he was involved in many experiments, often forgetting to publish the results, amid a general enthusiasm after the great victory in World War II. Near the end of his life, his decline in health coincided with the painful processes of the destruction of the country and was redoubled by them. He suffered much, seeing around him what he used to call "the revolution of criminals"; he was sometimes offended by his colleagues who poorly understood the situation. However, his contribution to science is lasting, as is the gratitude of the people who surrounded him.

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Milan V. Kurepa

Milan V. Kurepa, a distinguished Yugoslav atomic physicist, died on 16 October 2000 in Belgrade, following a heart operation.

Kurepa was born on 11 May 1933 in the small town of Bačka Palanka in Vojvodina, Serbia. In 1956, as an undergraduate, he began working at what is now the Vinča Institute of Nuclear Sciences near Belgrade. He earned a bachelor's degree in physical chemistry in 1957 at the University of Belgrade and started graduate studies in physics there in 1961. However, he spent the 1961–62 academic year in the electrical engineering department at the University of Liverpool in the UK, where J. D. Craggs supervised him. Kurepa earned his PhD in physics in 1963 at the University of Belgrade, as a student of Aleksandar Milojevič. His thesis topic was slow electron scattering off atoms and molecules.

Kurepa then joined the University of Belgrade physics department as an assistant professor. He became a professor in 1981 and continued in that position until his retirement in 1998. Kurepa also had visiting appointments in the UK at the University of York, the Royal Holloway College of the University of London, and the University of Southampton and in Germany at the University of Kaiserslautern. Kurepa's pedagogical work at the undergraduate and graduate levels was highly valued. He was a coauthor of 12 university and 4 high-school textbooks.

In 1964, Kurepa joined the newly founded Institute of Physics at the University of Belgrade as a research scientist. There, he started the Atomic Physics Laboratory. His abilities and work habits were the paradigm of professionalism and enthusiasm that he conveyed to his colleagues and his students. Due primarily to Kurepa's leadership, the Atomic Physics Laboratory gained an international reputation in the field of electron collisions with atoms or molecules. Many researchers from this laboratory have continued their careers in other institutes and universities in Yugoslavia, as well as around the world. At present, about a dozen of Kurepa's students are scientists and professors at leading universities in Australia, Belgium, the UK, France, Germany, Slovenia, Sweden, and the US.

Kurepa showed an extraordinary ability to promote scientific work in Yugoslavia, especially by establishing connections with international physics organizations and institutions. He was an outstanding organizer; for example, he coordinated both domestic and international conferences, the most important being the Eighth International Conference on the Physics of Electronic and Atomic Collisions, and several international symposia on the physics of ionized gases. He served as president of the Yugoslav National Physics Committee (1986–91) and was the Yugoslav representative for the atomic physics committee of the International Union of Pure and Applied Physics (1981–91). He also was a member of the European Physical Society (1972–92) and served on the executive committee of the Balkan Physical Union (1990–2000).

In 1994, Kurepa was elected the corresponding member of the Serbian Academy of Sciences and Arts (SANU). He often remarked that he felt SANU should not only represent and symbolize the unity and importance of science, but address the essential and immediate social needs—play a more active role within the scientific and intellectual sphere, in general. During the isolation of Yugoslav scientists from the rest of the world due to United Nations sanctions, Kurepa organized a very successful meeting of SANU in 1997 to celebrate the 100th anniversary of the discovery of the electron.

Kurepa fought for democracy in Yugoslavia. A vigorous adversary of Slobodan Milošević's regime, Kurepa founded in 1997 the Association of University Professors and Scientists, with the principal aim of fighting for the recovery of basic university freedoms in Serbia. He was AUPR's first president. The association has been especially active since 1998, when the University Act was introduced to abolish the autonomy of Serbian universities. AUPR has organized protest meetings at Serbian universities, published statements regarding university autonomy and freedom of opinion, appealed to international academic associations for intervention with the Serbian government, and engaged in similar activities.

With the same spirit, Kurepa actively participated in the nongovernmental Alternative Academic Educational Network (AAEN) and in the Southeast European Academic Network (SEAN). He was one of the founders of AAEN, which provides jobs for university staff who were either expelled from a university by the regime or retired on their own for the sake of self-respect (as did Kurepa). AAEN also promotes new educational ideas and methods, mainly following the college system, with an emphasis on students' active participation during lectures. It was primarily due to Kurepa that the natural sciences got its place in the AAEN program (which had been strongly oriented toward the humanistic sciences), with a course on the history and epistemology of science. SEAN helps organize and finance universities in the region, promoting modern educational standards. Kurepa took an active role in expounding the problems and needs of Serbian universities.

MILAN V. KUREPA

During the 2000 electoral campaign, Kurepa traveled around Serbia with the students' movement Otpor (The Resistance) that was instrumental in changing the ruling party in Serbia. Otpor awarded him a certificate, acknowledging him as "the most resistive professor." Kurepa valued this honor very much.

Kurepa will be remembered as a man of extraordinary scientific efficacy and exceptional moral strength. Those who had the privilege to be his colleagues and friends will keep a most pleasant and rewarding memory of him.

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Heinz Maier-Leibnitz

When Heinz Maier-Leibnitz, an emeritus professor of physics, received the ring of honor from his alma mater, the Technical University of Munich, I had the privilege of putting it on his finger at his home in Allensbach, Germany. He felt deeply honored. He died the next morning, 16 December 2000, of cancer.

Born on 28 March 1911 in Esslingen, Germany, Maier-Leibnitz studied physics at the universities of Stuttgart and Göttingen. As the last student of James Franck, Maier-Leibnitz earned a PhD degree in physics in 1935 from the University of Göttingen. The research was in the field of atomic physics, and Maier-Leibnitz discovered metastable, negative helium ions, which were later used for acceleration. Subsequently, he joined Walther Bothe in Heidelberg, where he improved the electron–gamma-ray coincidence technique, confirmed energy conservation in Compton scattering, and founded the field of nuclear spectroscopy.

At the beginning of World War II, Maier-Leibnitz served in the German air defense and later as a meteorologist at air bases in France. In 1942, he returned to Heidelberg to work with Bothe on decay schemes of radioactive nuclei using his coincidence technique.

After World War II, Maier-Leibnitz continued to work in nuclear spectroscopy and applied radioactive tracers in biochemistry and medicine. He also studied positron annihilation in solids, which became a new tool for measuring the momentum distribution of bound electrons. A measurement of the antineutrino angular distribution in the lithium-8 beta decay led to the discovery (in 1958) of the right-handedness of the antineutrino, shortly after the fall of parity.

In 1952, Maier-Leibnitz became professor of technical physics at the Technical University of Munich. He attracted many students to the field of nuclear physics, emphasizing research on new frontiers. One of his students, Rudolf Mössbauer, discovered recoil-free nuclear resonance fluorescence of gamma rays in solids, for which Mössbauer received the Nobel Prize in Physics in 1961. Maier-Leibnitz had created a school of innovative modern physics and received high international acclaim.

Maier-Leibnitz was offered the opportunity to build the first German research reactor in Garching, near Munich, in 1956. The 1-MW swimming-pool-type reactor was supported