Third All-Union School for Young Scientists: "Current Problems in Physics"

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"Rostov Velikii", the International Youth Center, has once again opened the hospitable doors of the ancient Rostov Kremlin to the Third All-Union School for Young Scientists, which was held on May 18–25, 1980 under the general heading "Current Problems in Physics."

The first School under this heading was organized in 1976 on the initiative of the Council of Young Scientists of the P. N. Lebedev Physics Institute of the USSR Academy of Sciences and the Division of Scientific Youth of the Central Committee of VLKSM, in response to a resolution of the USSR Academy of Sciences. It has now become a traditional biannual event. The success of the 1976 and 1978 Schools was reported on the pages of Volumes 122 (1977) and 126 (1978) of this Journal.

The all-union society "Znanie" has played a constructive role in the organization of the 1980 Rostov School. As on previous occasions, the P. N. Lebedev Physics Institute was given the immediate task of putting together the program. Its very varied scientific activities are particularly well-suited to the aims of the School. The success of the collaboration between the Academy, the VLKSM Central Committee, and "Znanie" in the organization of Third Rostov School was largely determined by its declared aim of covering as broad a range of topics as possible.

Program committee member L. P. Feoktistov has stated that "The School is not only a teaching institution for young physicists, but also a medium for communicating the lastest achievements in science. It provides a unique opportunity for acquiring extensive "front-line" information in readily digestible form. The great variety and range of this information help to illuminate the areas of contact between different branches of science, where one would normally expect to see the most notable advances and the clearest picture of the relationship between pure and applied research."

The three Rostov Schools that have been held so far have amply demonstrated the unified nature of physics, all branches of which are organically related and mutually enriching.

The unusually broad range of topics covered is not the only feature that distinguishes the Rostov School from other such events. It is unique, too, in the distinction of its lectures and the composition of its audience. Some of the most distinguished scientists of our country have lectured at the School. Those heard at the Third School included N. G. Basov, B. B. Kadomtsev, E. M. Lifshitz, R. Z. Safdeev, A. A. Samarskii, G. N. Flerov, and many other eminent specialists. During the seven days of the School, leading Soviet scientists unfolded before the youthful audience the entire panorama of modern physics. Unfortunately, lack of space prevents us from reviewing these lectures in detail. A mere listing is given at the end. The program covered practically all the branches of modern physics—from cosmology to the microworld—and included pure as well as applied topics; controlled thermonuclear fusion and nuclear power, nuclear physics and fundamental-particle physics, astrophysics, cosmology and space research, mathematical modeling in physics, nonlinear wave theory, nonlinear optics and holography, lasers and their applications, acoustoelectronics, physical aspects of the protection of the biosphere, physics education and the administration of modern science, and so on. Some of the topics were covered in special round-table meetings devoted to particular topics.

There was much interest in the meeting with the editorial board of this Journal and some of the contributors to it. Such meetings were also held during the previous Schools and are now traditional. This is hardly surprising since many of the lectures were based on papers published or to be published in this Journal. We note particularly the participation of the Editor-in-Chief B. B. Kadomtsev and his deputy B. M. Smirnov, who can rightly be regarded as true veterans of the Rostov School.

Despite the great range of topics examined in the course of the lectures, the participants were left with the overall impression that all branches of physics are captivating and interesting. This was facilitated by the successful combination of high-level topics and very clear exposition. The lively interaction between lectures and their audience was also greatly appreciated. Many of the problems discussed—some of which were highly specialized—were treated so as to emphasize features that are fundamental to a range of problems in physics. This left the audience with the impression of the wholeness of physics. Each lecture was followed by a flood of questions, and the audience was unusually active. Discussions continued unabated even after the formal lectures were over. This direct contact between lecturers and their audience cannot be rivalled by any other form of communication, and the proceedings of the School cannot adequately be reflected in any kind of report or monograph. It is indeed difficult to overestimate the value of the Rostov School as a medium of communication and creativity.

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A preliminary summary of the work of the Third School was given during the concluding session. Everyone noted the undoubted success of the School, its high scientific level, and the excellent organization. The increasing popularity of the School was also noted, and it was unanimously decided to continue this broad review of the subject in the future. The Fourth All-Union School is planned for 1982.

We should like to conclude this report by thanking the lecturers who spared no effort or time in communicating their knowledge to the youthful audience. We are confident that the Rostov School will continue to bridge the generation gap between physicists and will serve Soviet science well.

[1]The latest revolution in natural science (I. S. Alekseev)
[2]Picosecond spectroscopy (A. S. Akhmanov)
[3]Acoustoelectronics: present state and possible future developments (Yu. V. Gulyaev)
[4]Positive muons in solid state physics (I. I. Gurevich)
[5]Holography (Yu. N. Denisyuk)
[6]Small computers (A. N. Kabalevskiĭ
[7]Recent trends in the development of a system of international relationships (A. A. Kakoshin)
[8]Physical vacuum and the structure of the microworld (D. A. Kirzhnits)
[9]Gamma-ray astronomy (V. G. Kirillov-Ugryumov)
[10]Recent work at VAK (V. G. Kirillov-Ugryumov)
[11]Lasers in nuclear physics and astrophysics (V. S. Letokhov)
[12]Recent developments in cosmology (E. M. Lifshitz)
[13]Singularities in cosmological solutions of the Einstein equation (E. M. Lifshitz)
[14]Relativistic astrophysics: new discoveries in theory and observations (I. D. Novikov)
[15]Masers, lasers, and strange attractors (A. N. Oraevskiĭ)
[16]Studies of celestial objects by space-rocket techniques (R. Z. Sagdeev)
[17]Mathematical modeling, in physics (A. A. Samarskiĭ)
[18]Elementary particles and geometry (Ya. A. Smorodinskiĭ)
[19]Verification of the modern theory of weak interactions in the optical range (I. I. Sobel' man)
[20]Excitation of nuclear and thermonuclear reactions by a pulsed source (L. P. Feoktistov)
[21]New approaches to the fusion of heavy and superheavy elements. Nuclear filters (G. N. Flerov)

Round-table meeting: Laser thermonuclear fusion (led by N. G. Basov)

[22]Introductory lecture (N. G. Basov)
[23]Theory and experiment in LTF (V. B. Rozanov)
[24]Mathematical modelling in LTF (A. A. Samarskii)
[25]Similarity relations for pulsed compression of targets (L. P. Feoktistov)

Round-table meeting with the editorial board of "Uspekhi fizicheskikh nauk" and contributors to the Journal (led by Editor-in-Chief B. B. Kadomtsev)

[26]Nonlinear phenomena in optics (S. A. Akhmanov)
[27]Solitons and the nonlinear theory of waves (B. B. Kadomtsev)
[28]Physical aspects of the protection of the atmosphere (G. V. Rozenberg)
[29]Ball lightning (B. M. Smirnov)

Round-table meeting with the Editorial Board of "Priroda" and contributors to it (led by Deputy Editor-in-Chief V. A. Goncharov)

[30]Relativistic nuclei and multiquark states (A. M. Boldin)
[31]Protection of the enviromnent and ethics of scientific creativity (A. G. Malenkov)
[32]Submersibles and studies of the oceans (E. G. Mirlin)
[33]Astrophysical consequences of the probable confirmation of the nonzero rest mass of the neutrino (R. A. Syunyaev)
[34]Measurement of the shape of the beta-ray spectrum (Determination of the neutrino mass (E. F. Tret' yakov)

Round-table meeting: Problems in physics education (led by S. P. Kapitsa)

[35]Introductory lecture (S. P. Kapitsa)

Participants in discussions: I. I. Gurevich, E. M. Lifshitz, A. N. Oraevskiĭ, I. I. Sobel' man, L. P. Feoktistov, and G. N. Flerov

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