6th SEMINAR ON QUANTUM OPTICS AND QUANTUM INFORMATICS

Sixth Seminar in Memory of D. N. Klyshko at Moscow State University

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The sixth biennial Klyshko memorial seminar on quantum optics and quantum informatics, which is permanently held at Lomonosov Moscow State University, has ended. It is symbolic that the opening day of the seminar this year, May 21, 2009, coincided with the 80th birthday of David Nikolaevich Klyshko.

The scope of the seminar covers areas of modern physics, such as the physics of entangled states; the generation, transformation, and measurement of non-classical states of light; quantum information and quantum computations; quantum and polarization optics; quantum imaging; quantum nonlinear systems; and nonstationary optics.

Altogether, the 3-day program of the seminar contained 34 oral reports and 19 posters. The large number of poster reports, presented mainly by young participants, was a pleasant surprise and is indicative of the rise in popularity of the seminar among young scientists and the abundance of ideas in quantum optics and quantum informatics. As usual, the poster section was conducted in an atmosphere of vivid discussion. Oral reports were also actively discussed; traditionally, each 25-min report was accompanied by a 5-min discussion. As usual, fundamentals of quantum mechanics and their verification and interpretation were most hotly debated. Here, the known position of D.N. Klyshko that “interpretation is a matter of taste” was amplified by the thesis of F. Ya. Khalili that “a taste for this subject comes with age.” In any case, a concrete experiment on verifying the many-world interpretation of quantum mechanics presented at this seminar should undoubtedly be considered an achievement.

Speaking of the program of the seminar, we should note the development of issues that border on other areas. Many reports (e.g., reports delivered by G.Kh. Kitaeva, S.V. Sazonov, A.P. Sukhorukov, and V.S. Dneprovskii) discussed problems of nonlinear, rather than quantum, optics. Several reports were devoted to the study of gravitational waves involving methods of quantum optics (reports by S.P. Vyatchanin, Sh.L. Danilishin, A. Seleznev and others). Finally, many reports (e.g., those by A.A. Kalachev,

A.I. Trubilko, I.O. Barinov, and I.M. Sokolov) were in some way related to quantum informatics, which represents an interdisciplinary area and borders on informatics, mathematics, quantum theory, optics, and solid-state physics.

A special session was devoted to the memory of the recently departed V.P. Karasev. Valerii Pavlovich Karasev was a constant and active participant of our seminars, and his departure is a heavy loss, not only for us, but for all of Russian science. We believe that the contribution made by V.P. Karasev to quantum optics is still underappreciated and his ideas only begin to find understanding among the world scientific community. At this special session, reports by A.V. Masalov, S.P. Kulik, A.M. Basharov, and M.V. Chekhova were presented.

With good reason, we can say that the seminar became a traditional all-Russia conference and united nearly all leading Russian specialists in quantum optics and physics of quantum information. Despite the difficult financial conditions of this year, many speakers and audiences from other cities in Russia found an opportunity to attend the seminar. St. Petersburg, Kazan, Kaliningrad, Dubna, Vladimir, and Moscow are traditionally on the list of cities from which participants of the seminar arrive.

Another important feature of the seminar is the greater fraction of reports presented by young scientists. This is evidenced by author’s abstracts of candidates and doctoral dissertations in which the seminar permanently appears in the section “Approbation of Work.”

The program and abstracts of papers from the sixth seminar, as well as information on the five previous seminars held in 2001, 2002, 2003, 2005, and 2007 are available on the Internet at <http://qopt.phys.msu.ru>.

Materials published in this issue represent about 25% of all reports presented on May 21–23, 2009. However, we hope that they adequately reflect the scientific area of the seminar and convey its atmosphere.

Translated by V. Rogovoi