Special issue dedicated to the memory of Rem Viktorovich Khokhlov (1926 -1977)

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On 15 July 1996 Rem Viktorovich Khokhlov would have been seventy. He was an outstanding Russian physicist, a talented organiser of our country's and world science and of higher education, and a remarkable teacher.

Khokhlov's name is well known throughout the whole scientific world. It is nearly synonymous with such branches of science as nonlinear optics, nonlinear acoustics, and laser physics. His ideas, methods, and scientific devices are fully classical and form such an integral part of scientific usage that they seem commonplace and to have existed from time immemorial. The method of multistage simplification of equations, proposed and developed by Rem Khokhlov, opened up new horizons in the theory of nonlinear oscillations and waves. This method has become the cornerstone of the mathematical apparatus of nonlinear optics, nonlinear acoustics, and the dynamics of lasers, and of oscillations and waves in a plasma. Optical parametric amplifiers and oscillators have been demonstrating their usefulness in science for over 30 years. The very idea, the first prototypes, and a whole series of modifications of these fundamentally new optical devices are all linked with the names of R V Khokhlov and S A Akhmanov. Laser photochemistry, a modern and rapidly growing multidisciplinary branch of science, can also be traced back to the ideas of Rem Khokhlov and the work he carried out from 1967 to 1970. This applies also to photobiology. Atmospheric nonlinear optics, coherent x-ray and gamma-ray optics, and laser thermonuclear fusion of elements are also linked with Khokhlov's name.

The world's first monograph on nonlinear optics, Problemy Nelineinoi Optiki, was written by R V Khokhlov and S A Akhmanov. It was published in Russian in 1964 and immediately became a rarity. It was also published in English under the title Nonlinear Optics in 1972. Many chapters of this book have retained their scientific value today.

Khokhlov's scientific school was not only a community of young scientists who, after having been trained in the Section of Wave Processes of the Physics Department of Moscow University established by R V Khokhlov, are now working successfully at scientific centres throughout the world. The fact that they belong to this school is proudly claimed by those who have had personal contact with Rem Viktorovich at scientific seminars held in his section and at the excellent conferences on coherent and nonlinear optics organised by him, starting back in 1965. Khokhlov's scientific school represented also a specific community spirit treated by his irreproachable scientific ethics, sincere friendliness, and readiness to listen and understand. Rem Khokhlov generated a scientific and benevolent atmosphere that permeated all his activities.

Rector of the Moscow University, holder of a professorial chair, Academician, member of the Presidium of the Academy, and later Vice-President of the Academy of Sciences of the USSR, Vice-President of the International Association of Universities etc., etc.—R V Khokhlov worked prodigiously and hard, and was full of scientific and organisational ideas and plans.

He left us too early: he was 51, in the prime of life, when a tragic accident when climbing one of the highest peaks in the Pamirs led to his premature death. However, his scientific ideas, methods, and many of his organisational and teaching enterprises, are still alive.