



## NICHOLAS IONESCU-PALLAS AT 70 YEARS

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It is a pleasant duty for me to write, with all my affection and appreciation, about one of the most respectable Romanian physicists and a friend, Nicholas Ionescu-Pallas, at his 70<sup>th</sup> anniversary.

Nicholas Ionescu-Pallas was born the 30th July, 1932, the son of Ion Ionescu and Maria Dinca, in Pallas, close to the town Constantza, in Romania. With a strong bending for Mathematics, he became a student of the Faculty of Mathematics and Physics of the University in Bucharest (1951-1955). After taking his degree in Physical Sciences, Nicholas was admitted in the Laboratory of Spectroscopy of the Institute of Physics of the Romanian Academy.

In 1956, the institute changed its title and research directions becoming the Institute of Atomic Physics and the young researcher was working, as theorist, in the Laboratory of Optical Methods in Nuclear Physics, lead by Professor Ion Agarbiceanu.

In December 1959, Ionescu-Pallas married Constantza Potoceanu, a Physicist from the same institute, who will share with him the joy of work in Physics, the scientific successes and the understanding of the complex conditioning of the life.

The Agarbiceanu's laboratory obtained soon valuable results in the field of isotopic and hyperfine atomic structures, earning international recognition (for instance from professors A. Kastler and Jacquinet at Ecole Normale Superieure in Paris), after Ionescu-Pallas had provided an original theoretical interpretation of the results (Phys. Rev., **117**, 505(1960), Ann. Physik, **8**, 9(1961) and **10**, 121(1962)). In 1962, this laboratory obtained a very important achievement, the design and operation of the first He-Ne infrared laser, one year only after its first development in the United States. This outstanding result, obtained in hard times and with modest equipments, was recorded in the paper "Contributions a l'etude des lasers aux gas" by I. Agarbiceanu, A. Agafitei, L. Blanaru, N. Ionescu-Pallas, I.M. Popescu, V. Vasiliu and V.G. Velculescu (Proc. 3d Intl. Congress on Quantum Electronics, Paris, Feb.11-15, 1963). It has started a long standing effort in developing new types of lasers and their applications in Romania. Ionescu-Pallas brought again important contributions with

his calculations of the population inversion in two-level atomic systems with finite lifetimes (Opt. i Spektroskopiya, XVII, 139(1964)).

Ionescu-Pallas received the “Dragomir Hurmuzescu” Prize of the Romanian Academy, in 1966 and the Medal of Scientific Merit, in 1967. In that year, he held a course of ten lectures on “Optical Methods in Nuclear Physics” with the aim of better defining the specific objectives of the laboratory.

In 1967, Ionescu-Pallas is appointed senior scientific researcher for his relevant activity. In the same year, at age of 35, he published his most relevant work in theoretical physics, “The Relativistic Schrödinger Equation for a Particle with Arbitrary Spin”, in J. Franklin Inst., **284**, pp. 243-250. The work was highly appreciated by many theorists, including Prof. G. Petiau, from “Henri Poincare” Institute in Paris (author of the wave equation for particles with spin 1).

This was the moment when I met him first, immediately after my graduation and admission in the prestigious Institute of Atomic Physics. I was accepted by Prof. Agarbiceanu to make experiments and to operate, together of my colleague and friend, George Nemes, the first solid state laser in Romania. It was a very challenging period of scientific activity and we enjoyed very much the discussions with Ionescu-Pallas, many of them in the beautiful park close of the institute buildings. I remember our admiration for its serious scientific work, deep knowledge of different topics, culture and for his proverbial order. He was, without doubts, a strong example for many young researchers, like us. For myself, Nicholas remained the most valuable partner for scientific discussions in Physics and a life friend.

He received the degree of *Doctor in Physics* in 1971, with a thesis on “The Isotopic Shifts in Atomic Spectra”. In the interval 1970-1974, Ionescu-Pallas became the head of the Laboratory for Gaseous Lasers and Holography, at the Central Institute of Physics, Bucharest (the same institute with a new name and with strong orientations to applied research). In this time, he started a Course on Laser Physics (5 volumes), which was internally printed in the institute and which remained, for many of us, a strong background for modelling of laser and associated physical phenomena.

His competence was asked for complex calculations, which were needed to predict the critical parameters in the fusion driven by power lasers (Rev Roum. Phys. **18**, 123 (1973)).

A very important work for Dr. Ionescu-Pallas was dedicated to an “Evolutive Mechanics”, published with his specific modesty in Rev. Roum. Phys. **21**, 1065-86(1976).

The early interest of Ionescu-Pallas for General Relativity and Cosmology lead to new explanations for the cosmic red shift, new cosmological models and new gravitation theories based upon generalized matter tensors. Among outstanding results, to notice a theory in which Mach’s principle is naturally incorporated but the two constants - the Newton’s one and the Cosmological one - are epoch-dependent, in a correlated way. He published also an impressive “General Relativity and Cosmology” (Scientific and Encyclopedic Publ, 1980, 630 pp.). He had in this field the nice collaboration and the friendship of Prof. Liviu Sofonea and Ioan Gottlieb. (Ann. N.Y. Academy of Sciences, **470**, 376(1986)

At the Chernobyl accident, he studied and calculated the effects of the radioactive cloud on the human body, particularly in Romania and published, in collaboration with Prof. Mircea Oncescu, an internal report with very important results and long term predictions (Preprint Central Inst. Phys. RB-19-1987, 26 pp).

I have to mention our collaboration in the treatment of some inverse problems in coherent optics (holographic interferometry, focusing method, schlieren method),

which lead to new algorithms for image processing, new modern optical instruments and some appreciated papers in the field (Rev. Roum. Phys., **36**, 915(1991), Opt. Eng., **35**, 1305(1996)). He gave a course on ‘Numerical Physical Data Analysis’, intended to accommodate the experimentalists with the mathematical interpretation of their results, which had a large audience from the physics institutes and the Faculty of Physics, in the University of Bucharest.

After 1991, he decided to retire from the work with everyday constraints due to some health problems, but he continued to be active in the scientific work. The gravitation theory presented in this issue of Romanian Reports in Physics shows one of his major interests. Some other papers published previously in the same journal and in Fortschritte der Physik (**48**, 657(2000) and 2003), are the testimonies of our long and fruitful collaboration in the area of quantum gases in boxes with low adiabatic invariant. They modified the forms of the well-known statistical distributions and of the thermodynamic functions of the confined quantum gases accounting for the quantizing of the kinetic energy.

Dr. Ionescu-Pallas is the author of over 250 works of physics, such as journal articles and papers on relativistic and classical mechanics, thermodynamics, quantum mechanics, lasers and plasma physics, cosmology and applied mathematics. He published three books on theoretical physics, including ‘Introduction in the Modern Theoretical Mechanics’, Publ. House of the Romanian Academy, 1969, ‘General Relativity and Cosmology’ (Scientific and Encyclopedic Publ, 1980 (630 pp.) and ‘Quantum Mechanics’, C.I.P. Publ. House, 1990.

Many of his colleagues and friends have admired his poetry, which includes poems of love, psychological introspection, landscapes, Romanian traditions etc., as well as a great anthology of Romanian Poetry (improved from a prosodic view point). He gave good translations of some foreign poems and improved the expressions of some Romanian poems and sacred works. He was an active member of the literary society ‘Romanian Relief’.

Among other activities to notice philosophy and history of science (including studies on Aristotle, Riemann, Helmholtz, Milne, Voigt, Dirac, Einstein, Hertz, Friedman, the History of Relativity and Quantum Mechanics). Dr. Ionescu-Pallas has studied, with an unique dedication, the biographies of Romanian physicists, which were partly published in dictionaries and journals, as well as in the Romanian newsletter ‘Curierul de Fizica’ and remain a valuable source for future studies on the physics history. He brought also an important contribution to the understanding of the calendar used in Dacia.

He was a member of the Academic Committee for the Philosophy and History of Science, of the European Physical Society (since 1971), of the European Group for Atomic Spectroscopy (since 1970), of the Institute for Scientific Culture E. Majorana (since 1976), of the International Society of Gravitation and General Relativity (since 1978) and of the Astronomical Society of India (since 1982). He was a representative of the intellectuals in the Scientific Council of the Institute for Atomic Physics, 1970-1975; a member of the National Committee of Physics in 1970, and a member of the Coordinating Committee for the Romanian Encyclopaedia of Physics in 1983. His biographical data are available in Men of Achievement, Who’s Who in the World, and Short History of Romanian Scientific and Technical Creativeness.

His attitude towards science and life comes from his passion for science as relevant source of fundamental knowledge, from his efforts to understand science at the level of principles and to reach a consistent picture of the World. He is an adept of the principle of tolerance and of the humanism.

The journal *Romanian Reports in Physics* is indebted to Dr. Nicholas Ionescu-Pallas for his scientific competence and for his profound reviews of many papers, which increased the scientific quality of this journal. At this anniversary, the Editorial Board and myself are wishing to our senior colleague and friend, Nicholas, good health for him and for his family, as well as new and fruitful ideas in his scientific and cultural works, to which he has dedicated his life.