IN HONOREM

Oliviu Gherman – 80 years old, a lifetime dedicated to Physics

A few months ago, Romanian Physics was proud to celebrate one of the community members whose fame goes beyond that of an outstanding scholar since he can be rightly said to be a creator of a school of thought. Professor Oliviu Gherman celebrated 80 years old on 26 April 2010.

I. BIOGRAPHY

Oliviu Gherman was born in the Mihai Viteazu village, Cluj County, Romania on 26 April 1930. He became Bachelor of Science in Physics and Mathematics at the “Babes-Bolyai” University of Cluj-Napoca in 1952. He was awarded Ph.D. in Physics and Mathematics at the University of Bucharest in 1957, having as scientific supervisor Professor Serban Titeica, Fellow of the Romanian Academy. He started his academic career as an undergraduate, being employed at the “Babes-Bolyai” University of Cluj-Napoca successively as Junior Assistant, Junior Lecturer and Senior Lecturer. From 1958 to 1960 he worked as a specialist at the International Atomic Energy Agency (IAEA), Vienna. From 1960 to 1966 he joined again the “Babes-Bolyai” University of Cluj-Napoca as Senior Lecturer (1960–1962), Reader (1962–1966) and as Dean of the faculty (1965–1966).

In 1966, upon the foundation of the University of Craiova, Oliviu Gherman decided to painstakingly and passionately contribute to the identity shaping of this new higher education institution in Romania. He moved there and dedicated his efforts as Professor and Vice-Rector of the University. Between 1972–1974 he was Dean of the Faculty of Chemistry, within the same university, and after 1974 he became Head of the Department of Physics. He taught core courses of Physics – Electrodynamics, Atomic and Molecular Physics, Quantum Mechanics, Thermodynamics and Statistical Physics, Quantum Field Theory, Nuclear Physics – handling down interest and intellectual generosity to younger colleagues that took over.

His highly creative thinking, equally featured by openness to innovation in Theoretical Physics, hallmarkd the development of the Department of Physics from the University of Craiova, of which he was in charge until 1990 and which he
has constantly supported ever since. His colleagues of the Department of Theoretical Physics vividly remember the series of lectures on new horizons in Physics, which he delivered after internships at well-known institutions in the world - for instance, the Superstring Theory series of lectures after several internships at the International Centre for Theoretical Physics in Trieste, the UNESCO Institute where Oliviu Gherman was Scientist and Senior Scientist since 1973. Between 1991–1993 he was President of the Scientific Council of the Institute of Atomic Physics of Bucharest and in 1995 he was awarded Doctor Honoris Causa of the State University of the Republic of Moldova.

The political changes in Romania in the '90 in Romania open a new chapter in the life of Professor Gherman. Because of his strong personality and his prestige he was elected in the parliamentary structures of the country. He held successively the positions of Vice President of the Senate, Honorary President of the Social Democratic Party, President of the Senate, Ambassador of Romania in France and, last but not least, Romanian representative at IAEA, Vienna. It meant that Oliviu Gherman completed the cycle opened at IAEA in 1958, and it was true to his membership to a community that he felt really connected to and to which he was committedly-oriented, i.e. the Romanian Physics community. Regardless of the position from which he interacted with the community – as a scientist, university teacher or politician bearing the responsibility of important decision-making during a difficult period in the recent history of Romania, Professor Gherman managed to be the same person: kind and determined.

II. SCIENTIFIC ACTIVITY

Professor Oliviu Gherman, an outstanding representative of the Theoretical Physics School of Cluj-Napoca, is considered the founder of the School of Physics and Research in Theoretical Physics at the University of Craiova (where he has been a Doctoral Supervisor in Theoretical Physics since 1967). Although somehow concentrated in two universities, of Cluj-Napoca and Craiova, respectively, Professor Gherman’s activity is far from being confined to only two geographical areas. Undoubtedly, he had a major contribution to the shaping of a national school of Theoretical Physics. Besides Cluj-Napoca and Craiova, he enhanced the development of research in Theoretical Physics in Timisoara and Brasov and, to a large extent, he was involved in supervising the majority of doctoral theses in the field, both as a Doctoral supervisor and reviewer, not only in the Romanian universities, but also in two other important entities: the University of Bucharest and “Horia Hulubei” National Institute for Physics and Nuclear Engineering, Bucharest. Under the direct supervision of Professor Oliviu Gherman, more than 25 physicists, fairly contributing to the development of Theoretical Physics education and research in Romania, completed their doctoral theses.
As it often happens when university-based physicists, combining research and teaching activities, Professor Oliviu Gherman conducted scientific research in several fields of Theoretical Physics. Definitely, he showed preference for some of these, such as Electrodynamics and Quantum Field Theory of Fundamental Interactions and Quantum Statistical Systems, confessing to be fascinated by the unmatched symphony of nature and of physics.

The papers he published between 1961–1963 in the *Revue d'Optique* (the current *Journal of Optics*) contributed to the introduction of the Stokes parameters method in the Classical Electrodynamics (which was a breakthrough in Electrodynamics at the time) and then to remarkable generalizations of multipole approximations (*Studia Univ. Babes Bolyai MS Ph. F2*, 1967) and of equations of Electrodynamics of Moving Media (*Revue Roumaine de Physique*, 1968).

With respect to Quantum Field Theory for the description of the fundamental interactions and of the statistical properties, Professor Oliviu Gherman’s research as well as the research carried out by his colleagues under his guidances focused on the algebraical approach to the description of the realization of exact and broken symmetries and of their implications. Chronologically, the first results in this respect concerned the connection between the singularities of the spectral problem of the perturbed Hamilton operator and the symmetry properties of the perturbed system (*Journal of Mathematical Physics*, 1976).


The existence of a new type of contributions to the generations of massless chiral fermions associated with the heterotic superstring was also proved (*Physics Letters*, 1987). This new type of contributions, in conjunction with other two previously known types, allows for the complete classification of the class of massless chiral fermions and the identification of the unification models with chiral fermions compatible with the theory of the heterotic superstring.

### III. CONTRIBUTIONS TO THE ROMANIAN SCHOOL OF THEORETICAL PHYSICS

Electrodynamics, which Professor Oliviu Gherman considered to be at the core of classical Physics of fundamental interactions, was and continues to be a favourite scientific research focus and educational approach. Concerning the latter, Professor Oliviu Gherman was involved in the Romanian translation of J.D. Jackson’s *Classical Electrodynamics* (1991). Moreover, the translation into
Romanian of far-reaching physics books and papers, thus making them available to those pursuing a career in the field at a time when access to information was rather limited, is another major contribution of Professor Gherman to the development of a national School of Physics. Besides the above mentioned, Oliviu Gherman translated K. N. Muhin’s two-volume coursebook, *Nuclear Physics* (1981) and one of the volume of The *Feynman Lectures on Physics* (1970). Professor Gherman is also acclaimed for having several volumes of the Landau and Lifchitz series translated into Romanian and of the American papers *Physics P.S.S.C* mainly addressed to school-based teachers and students.

Certainly, Physics Teaching Methodology at different levels (university, high school and secondary school) and for General and Specific Purposes has always appealed to Professor Oliviu Gherman.


Equilibrium thermodynamics, perhaps the most representative Physics factual theory, deserves special attention in what concerns teaching at the high school level and the logical reconstruction of physics theories in the spirit of the philosophy of science, which explains Professor Oliviu Gherman’s commitment to design a Thermodynamics textbook for intensive programmes in Physics (1973) and to write a paper on the philosophy of physics – published in a collection (1984).

His involvement in designing a textbook in Electrostatics for gifted students in Physics (1974), a high school Student Workbook in Physics (1975) and a recent textbook in Mechanics (2008) is noteworthy, revealing Professor Gherman’s efforts directed at providing a complete series of reference learning material for gifted and highly motivated students.

We wish Professor Gherman good health, energy and strength to complete his large-scale work, to carry out all the scientific and educational projects designed in the past 60 years.

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