

Stefan Procopiu - the European heritage of the Romanian scientist

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Abstract. The scientific heritage of Stefan Procopiu (1890-1972) physicist, educator and member of Romanian Academy have an international dimension. His scientific works, reflected in a series of discoveries, opened new directions of research in Physics as: the depolarization of light by the suspension of crystalline particles (Procopiu’s phenomenon), the circular effect of discontinuity of demagnetization, which occurs when an alternative electric current flows through a ferromagnetic wire (Procopiu’ effect – inverse Wiedemann effect), the calculation of the magnetic moment of the electron (Bohr-Procopiu magneton), first systematic measurement of terrestrial magnetism in Eastern Europe.

1 Life and Scientific Work



Stefan Procopiu was a Romanian physicist, researcher, academician, illustrious educator and professor whose heritage is preserved by national science history but not so well-known because his life had taken place during the period of Iron Curtain that separated Europe in two.

Born on January 19th 1890, in Bârlad a small city in South East part of historic region Moldova he graduated high school in his native town in 1908 he attended the Faculty of Sciences at Iasi University (1908-1912). Between 1919 and 1924, he conducted doctoral studies at Sorbonne University in Paris under the supervision of Gabriel Lippman and Aimé Cotton and defended the thesis in Physical Sciences on March 4th 1924 with the work: “On electric birefringence of suspensions” [2].

He returned to Romania where he built his academic and professional career at University of Iasi and jointed new founded Polytechnic University until his death in 1972. He was professor and Chair of Department of Gravity, Heat and Electricity until his retirement in 1962 [2]. He was the coordinator of the Physics Section of the Romanian Academy - Iasi Branch.

His consecration began in 1912 with the publication of the paper entitled "Sur les elements d'energie" published in „Annales Scientifique de l’Université de Jassy” published by the Masson Publishing House summarizing his theoretical researches on the magneton. Procopiu established for the first time in the world the value of the molecular magnetic moment, acknowledged and known today as Bohr - Procopiu’s magneton that calculates the value of the magneton a year before the Danish physicist Niels Bohr and is known in the Romanian literature under the name of BOHR-PROCOPIUM MAGNETON.

During the PhD studies in Paris, he studied a new optical phenomenon consisting of the longitudinal depolarization of light by suspensions and colloids. The results of were presented at the Paris Academy meeting on August 8th 1921. The paper entitled “Dépolarisation de la lumière par les liquides tenant en suspension des particules cristallines“ was published in Comptes rendus de l’Academie des Sciences, Vol. 173, Paris, 1921. After discovering this phenomenon, several

physicists were concerned about this, and in 1939 the physicists Augustin Boutaric and J. Breton surnamed Procopiu's Phenomenon [1-2].

Another priority area of Procopiu's research was the discovery of inverse Wiedemann effect in different metals and alloys presented in numerous specialized journals in the country and abroad. The phenomenon was "rediscovered" in 1932 by Richard M. Bozorth and Joy F. Dillinger, which they called transverse effect [3]. The effect was surnamed in 1951 by physicists T.A. Hofbauer and K.M. Koch (Austria) Procopiu's effect in recognition of the first work and important contribution in the field of ferromagnetism.

Through systematic field research for nearly 3 decades, Procopiu has made major contributions to terrestrial magnetism, with significant results through studies and drawing of the first complete magnetic maps for Romania.

In 1955 he became a member of the Romanian Academy and in February 1967 he was awarded the title of DOCTOR HONORIS CAUSA by the Polytechnic Institute of Iasi.

2 Reformer of Polytechnic education

Through his work for more than 4 decades he contributed to the development of the physics and polytechnic education at University and Polytechnic School of Iasi. Along with several professors of university of Iasi established the Polytechnic School "Gh. Asachi" in Iasi in 1937, being the first dean of the Faculty of Electricity (1937-1941). Creator of school and science, PhD leader, pedagogue, illustrator, Stephen Procopiu is a landmark for Romanian science.

3 Scientific and Cultural Heritage of Professor Stefan Procopiu

The scientist's scientific personality is now treasured at "Ștefan Procopiu" Museum of Science and Technology, since 1994, by creating the memorial collection bearing its name, based on the his wife's donations. The museum preserves, capitalizes and promotes his memory through interactive activities and exhibitions on ferromagnetism and terrestrial magnetism organized by the museum. The Romanian Academy established an annual prize in Physical Sciences with the name of Stefan Procopiu. At national level there are every year scholar competitions for pre-university students encouraging creativity. Are many cultural institutions, libraries and high schools remembering scientist name.

Through his scientific and academic activity, Procopiu contributed to the development of physics education creating at Iasi a school in magnetism with high impact at European level.

The paper will discuss in details these scientific and academic contributions.

References

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