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HISTORY OF THE MATHEMATICAL AND THEORETICAL PHYSICS IN THE SOFIA UNIVERSITY (1925-1935)

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ABSTRACT

Theoretical and mathematical physics were an important ingredients in the history of higher education in physics in Bulgaria. Faculty of Physics and Mathematics was created at the Sofia University without a chair of theoretical physics in 1889. Mathematical physics chair was planed at the begining. The attempt for a chair of mathematical physics creation was unsuccessful during the first quarter of twenthieth century. Georges Maneff created a chair of theoretical physics instead the chair of mathematical physics. The chair of theoretical physics caused a dispute between faculty members. The dispute about the chair of theoretical physics was a controversy between different scientific viewpoints in the University of Sofia. That was the reason the publications of G. Maneff were evaluated negative by K. Popoff, N. Obrechkoff and I. Tzenoff during the period 1925-1935.

Keywords: History, Theoretical Physics, University, Bulgaria

1. Introduction

The first chair of theoretical physics caused a dispute in Bulgaria. Georges Ivanoff Maneff (15.01.1884-15.07.1965) was a side in the controversy as a founder of the theoretical physics in the Sofia University. In 28.11.1944 he was eliminated from the University with a Decree 7 and forgotten for decades.

G. Maneff suggested classical alternative to relativity. At the solar system he provided the same good theoretical approximations as the general relativity without leaving the classical mechanics. It was called Maneff's field. His potential was featured by the $A/r + B/r^2$, with A and B real parameters. Florin Diacu learned from Hagihara's *Celestial Mechanics* (v. 2, Part I, 1975) about the Maneff's gravitational law in 1993. He showed that the Maneff's model was more suited to the needs of celestial mechanics [1].

The name of Maneff as scientist was exculpated after that [2, 3]. In the history of physics in Bulgaria it had been established, that the controversy was personality and the attitude to G. Maneff was for reasons of political [4]. Negative reviews about the publications of Maneff from 1925 to 1935 are important source materials about the history of theoretical physics in Bulgaria. On the basis of these source materials present report aims to show that the dispute about the chair of theoretical physics was a dispute between different scientific viewpoints in the University of Sofia.

2. Mathematical physics chair planned

A chair of mathematical physics was planned in the Sofia University. Preparation to open the chair of mathematical physics began with a change in the Law. Mathematical physics was included into the chair of

analytical mechanics in the Law of University (1904). Independent chair of mathematical physics was written down in the Law of 1909.

A competition in the chair of mathematical physics was successfully held after the First World War. G. Maneff and M. Boiadjiev participated in it (session 3 / 30.10.1920). A. Christoff and I. Tzenoff were reviewers. They valued affirmative G. Maneff and turned down another candidate. The faculty council (session 8 / 22.03.1921) chose G. Maneff as an associate professor in mathematical physics [5, p. 46]. He was appointed with a Royal Edict 86 / 21.04.1921. G. Maneff began to lecture in 02.02.1922. He took the follow oath: "*I swear in the name of the united God, that I shall keep sacred the Laws of the country, I shall perform appointment without partiality, I shell keep an official secret, and I shell play fair and just in everything. I shell remember, that I shell give an account for all in the God and in the Laws. Amen*" [6, p. 41].

3. Theoretical physics chair creation

The first Bulgarian lecturer in theoretical physics specialized in abroad. N. Stoianoff received a grant to specialize theoretical physics in Germany and France (3.1.1904-16.1.1906) [7, p. 127]. However, his training failed because he took the chair in astronomy when the University was in crisis in 1907. G. Maneff obtained a grant to study theoretical physics with ordinance № 644/31.09.1913. He worked one year with professor H. Bouasse in Toulouse.

Maneff created a chair of theoretical physics instead a chair of mathematical physics in the Sofia University. The change was made by the Law in 1924. The cours in theoretical physics included: "*mechanics, theory of elasticity, termodinamics, electrisity and magnetism, optics*". The course was published by the name "*Introduction in the theoretical physics*". It had two volumes: the first called "*Principles to the matter*" (1938) and the second called "*Principles to the ether*" (1940). Also G. Maneff lectured some new theoretical courses in "*theory of relativity*" (1922/3), "*quantum theory*" (1931/2), "*basis of the quantum mechanics*" (1933/4), "*statistical mechanics*" (1935/6), "*electronic theory*" (1936/7-1938/9), "*heat radiation, atomic and quantum theory*" (1939/40). Maneff introduced seminar in theoretical physics in 1927-1928 academic year. Raschco Zaycoff, Emil Djakow, N. Karabacheff and Asen Dachew were the assistant professors in theoretical physics [8].

Debate for mathematical or theoretical physics chair

The change in the name of the chair induced different opinions at the Faculty of Physics and Mathematics. Kiril Popoff was the first who objected to the change of the chair. He was trained by Poincaré. K. Popoff supported the relativistic methods in physics. He resisted the election of extraordinary professor in theoretical physics. G. Maneff was an only candidate in the competition. In the new six presented articles G. Maneff replaced the relativity theory of Einstein with a new theory [9]. K. Popoff and P. Pentchew were reviewers for the competition. K. Popoff gave a negative evaluation to the G. Maneff's papers. Nevertheless, as a result of the positive opinion of P. Pentchew, the faculty council chose G. Maneff as an extraordinary professor in theoretical physics in 14.04.1925 [10, p. 33].

A settlement by compromise offered Raschco Zaycoff, assistant professor in physics. He applied to the Faculty "*to be appointed as a private associated professor in mathematical physics*" in 12.10.1929 [10, p. 36]. A. Christoff, the head of the Institute of Physics, gave the next answer in 29.04.1930: "*Lecturers in physics discussed in detail the question to opening a private readership* [of mathematical physics] *in the chair of theoretical physics and based on a report, written by G. Maneff, they decided that there was no necessity for such readership now*" [11, p. 57]. R. Zaycoff was removed from the University in 15.03.1930 [11, p. 76] and he was returned in it in 29.01.1932 [12, p. 6].

Rejection of an alternative course in mathematical physics strained the relations between the faculty members. Three competitions for a professor in theoretical physics were organized, because the both side in the dispute used allowed and unallowed means.

The first competition for professor in theoretical physics (announced in 23.05.1930) finished without result. R. Zaycoff submitted his publications for participating in the competition, but he drew them out under pressure at the last moment. G. Maneff took part with 13 new publications. Mathematicians K. Popoff and Nicolas Obrechkoff were reviewers. Their opinions were negative for the both candidates [11, p. 7].

Two years later, the second competition for professor in theoretical physics closed unsuccessfully, too. G. Maneff took part in it with four new publications. P. Varbanoff was another candidate. I. Tzenoff and astronomer N. Boneff were reviewers. The competition collapsed by moral arguments. At that time the faculty council investigated two scandals: the unofficial letter from K. Popoff to A. Einstein and the pressure on R. Zaycoff at the first competition for the professor in theoretical physics. N. Boneff recommended G. Maneff to be a head of chair. I. Tzenoff gave two negative reviews and the faculty council rejected the both candidates in 16.03.1932 [11, p. 60].

A head of the chair in theoretical physics was successfully elected at the third competition. It was announced on 29.01.1935. G. Maneff and R. Zaycoff took part in it again. G. Maneff presented new six publications. The reviewers were the same. They unanimously recommended G. Maneff in 22.06.1935 (session 18 of the faculty council) [13, p. 59]. G. Maneff was elected and appointed as a professor in theoretical physics with a Royal Decree 44 / 13.07.1935 [6, p. 92].

4. Negative opinions on Maneff (1925-1935)

All publications of G. Maneff, written in the period 1921 – 1935, were thirty. Half of them were published in Comptes Rendus (7), Zeitschrift fur Physik (3), Terrestrial Magnetism und Atmospherie Electricites (2), Zeitschrift fur Astrophysik (2), Astronomische Nachrichten (1).

Publications of G. Maneff were reviewed at the University in Sofia five times (in 1921, 1925, 1930, 1932, and 1935). The volume of reviews reached generally more than 220 hand-written pages. Mathematicians K. Popoff (10 pages in 1925 and 18 pages in 1930) and N. Obrechkoff (17 pages in 1930), and mechanics I. Tzenoff (4 pages in 1921, 64 pages in 1932) gave negative opinions for the publications of G. Maneff. The physicists A. Christoff (2 pages in 1921) and P. Pentchew (6 pages in 1925), and the astronomer N. Boneff (29 pages in 1932, 37 pages in 1935) and mechanics I. Tzenoff (39 pages in 1935) gave positive opinions for the publications of Maneff.

All reviewers recognized the strong physics character to the publications of G. Maneff. In that relation K. Popoff wrote: "*The development of the question for the movement of the perihelion of the Mercury is successful ... Formulation of the question at the page 143, where G. Maneff applies the theorem of the living force is important, too. Unfortunately Mr. Maneff loses out of his hands the logical development of the question and goes into Sophistry, as he declines to write in details the equations of the light beam propagation and to solve them as differential equations*" [10, p. 33].

Comparison was made between the works of G. Maneff and A. Einstein. N. Obrechkoff wrote: "*physicists aspire to ascertain and explain these facts, parallel with the Einstein's investigations, working on classical theories. However always those were adapted speculations, that could explane only single facts, without giving a complete description of natural phenomena as Einstein does ... In that connection the theory of Einstein was unrivalled one. All such attempts have only special mathematical interests ... Thus the theory of Einstein is up to now ... only one that gives us contemporary interpretation of physics universe ... inexactness and fabrication at the suppositions* [of G. Maneff] *... are rooted in the fact that he wants to explain things, which are nothing to explain. Or more clearly speaking he aspires to give physical explanation on pure mathematical formulas*" [12, p. 25]. K. Popoff wrote that G. Maneff "*aims to show the value in the abandoned old theories ... and he strives with the principle of old mechanics to receive all resultes of new one ... Mr Maneff wrongs practically in every pages against fundamental principle of mechanics ... Mr Maneff studies the ray deflection in gravity field in a way, I would say, identical with the way of Einstein, if G. Maneff has not made here significant mistakes as well, that damage the results of Einstein"* [10, p. 33].

Technical mistakes, unskilful mathematical presentations and weak mathematical substantiations to the ideas of Maneff are indicated by reviewers. K. Popoff wrote: "*Generally, the most important preliminary analysis is missing*

in the papers of Mr Maneff ... He makes some logical jumps, that make his results unimportant and without every mathematical authenticity ... Mr Maneff needs to become thoughtful and to check his given sketchily calculations" [12, p. 11]. I. Tzenoff wrote: "*there are errors and confusions at the presentations … Mr Maneff does not represent always quantities in his formulas with the same letters*" [13, p. 84].

5. Conclusion

Unsuccessful attempt for created a chair in mathematical physics was made in the Faculty of Physics and Mathematics at the Sofia University during the first quarter of twenthieth century. G. Maneff made a speciality of theoretical physics in abroad. He created a chair of theoretical physics instead a chair of mathematical physics. The change to the chair of mathematical physics caused a dispute in Bulgaria.

The dispute about the chair of theoretical physics was a controversy between different scientific viewpoints in the University of Sofia. That was the reason to negative opinions on the publication of G. Maneff made by K. Popoff, N. Obrechkow and I. Tzenoff in the Faculty of Physics and Mathematics of the Sofia University during the period 1925-1935.

6. References

[1] V. Mioc, M. Stavinschi, Proceedings Balkan meeting of young astronomers 25-29 September, 2000, Belogradchik, Bulgaria, 2001, p. 53
[2] Н. Сретенова, Университетът и физиците начало, София, 2000
[3] M. Tsvetkov, Proceedings Balkan meeting of young astronomers 25-29 September, 2000, Belogradchik, Bulgaria, 2001, p. 62
[4] Д. Христов, Проблемът Манев в историята на българската физика, София, 2000
[5] ДА, София, ф. 994к, оп. 13, а.е. 19
[6] ДА, София, ф. 994к, оп. 2, а.е. 288
[7] ДА, София, ф. 994к, оп. 2, а.е. 8
[8] G. Kamisheva, A. Vavrek, Bulgarian Journal of Physics, v. 27, 2000. No 4, p. 59
[9] G. Maneff, Comptes Rendus, t. 178, 1924, p. 2159; t. 179, 1924, p. 96; Zeitschrift für Physik, Bd. 31, 1925, s. 786
[10] ДА, София, ф. 994к, оп. 13, а.е. 22
[11] ДА, София, ф. 994к, оп. 13, а.е. 27
[12] ДА, София, ф. 994к, оп. 13, а.е. 28
[13] ДА, София, ф. 994к, оп. 13, а.е. 30

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