

## THE LVOV YEARS OF WAŁAW SIERPIŃSKI

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**Abstract.** An account is given of Sierpiński’s activity in Lvov (1908–1918) interrupted by World War I.

On obtaining his doctorate at Cracow in 1906 Sierpiński returned to Warsaw. He had been persuaded by J. Puzyna to apply for habilitation at the University of Lvov and, indeed, on July 6, 1908 he obtained there “*venia legendi*”, the right to teach. His habilitation thesis consisted of three papers [1], [2], [3], of which by far the most important was the first. Here Sierpiński proves by Voronoï’s method that the number of integer solutions of the inequality  $m^2 + n^2 \leq x$  is  $\pi x + O(x^{1/3})$ . Sierpiński’s habilitation lecture entitled “On the notion of correspondence in mathematics” (in Polish) was later published as [7]. A function is defined there as a mental process, which shows that in 1908 Sierpiński was not yet an expert in set theory. In the autumn of 1908 he begun his lectures at the University of Lvov as the so-called private docent (*Privatdozent*, free reader). As such he did not receive any salary from the university, only a part of the money paid to the university by the students attending his lectures.

In the academic year 1908/9 Sierpiński lectured only on classical subjects, but the next academic year he gave a systematic course of lectures on set theory. This was one of the first such courses in Europe, but not the first as Sierpiński wrote many years later [22], being induced into the error by an opinion of Quido Vetter, historian of mathematics. Earlier courses on set theory had been given by Zermelo, Hausdorff and Landau (see [24]). The content of Sierpiński’s lecture was first published in mimeographed form [14] and then, in 1912, as a book [16]. This was in chronological order the fifth book on set theory in the world (see [21], p. 133). It was honoured by the Cracow Academy of Arts and Sciences by the Konstanty Simon prize (1913). Among first students of Sierpiński

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2000 *Mathematics Subject Classification*: Primary 01A72; Secondary 11-03.

The paper is in final form and no version of it will be published elsewhere.

were Otton Nikodym and Stanisław Ruziewicz and in his seminar (in 1910) participated future professors of philosophy, Kazimierz Ajdukiewicz and Tadeusz Czeżowski.

On July 19, 1910 Sierpiński married Anna Kazimiera Leśniewska. In September he was nominated by the emperor Franz Joseph an associate professor at the University and became head of the second chair of mathematics. In order to make it possible, Sierpiński took the Austrian citizenship. In 1912 the university proposed to the ministry his promotion to full professorship, but the proposal was rejected on financial grounds. Also in 1912 Sierpiński's only child, Mieczysław was born.

In 1913 Sierpiński promoted his formally first Ph.D. student, Stefan Mazurkiewicz and the next year their joint paper [20] appeared, the first of the three joint publications. In summer 1914 Sierpiński visited his parents in law in their property Poznajów in Byelorussia. At the outbreak of World War I he was, as an Austrian citizen, together with his family interned first at Wiatka, then in Moscow. In the autumn of 1917 Sierpiński escaped from Russia via Finland and via Sweden returned to Lvov. Here Sierpiński lectured at the university for the summer semester of 1918 and then accepted a position in Warsaw.

During the Lvov years Sierpiński published about 70 research papers, four surveys (see [23], pp. 15–50), twelve mimeographed lecture notes [4–6], [8–11], [13–15], [17], [19] and three books [12], [16] and [18]. In January 1910 Sierpiński proved (see [23], 158–160), later than P. Bohl, but independently, the uniform distribution mod 1 of multiples of an irrational number. In February 1911 he studied expansions of real numbers into series (see [23], 236–254) now known as Engel series, although Engel studied them two years later. That was for several years the last research paper of Sierpiński close to number theory, afterwards his interests shifted completely to set theory. This was important not only to him, but to Polish mathematics in general.

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