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A biographical note

by

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The dutch mathematician J. G. van der Corput was born at Rotterdam on September 4th, 1890. From 1908 to 1914 he studied at Leyden university, where analysis and analytical number theory were taught by J. C. Kluyver (1860–1932), who was the first one to promote the study of rigid modern analysis and analytical number theory in the Netherlands. Van der Corput had to serve as an officer in the army from 1914 to 1917. From 1917 to 1920 he taught mathematics in secondary shools at Leeuwarden and Utrecht. In this period he got his doctorate from Leyden university. Part of the year 1920 he spent with E. Landau at Göttingen. From 1920 to 1922 Van der Corput was A. Denjoy's assistant at Utrecht university, and from 1922 to 1923 professor at Fribourg (Switzerland). In 1923 he returned to the Netherlands as professor at the university of Groningen. He stayed there until 1946, and then moved to the municipal university of Amsterdam (1946–1953). From then on he had various positions in the United States, like Berkeley (California) from 1954 to 1958, Stanford (California) and Madison (Wisconsin). As professor emeritus he returned to the Netherlands and died at Amsterdam on September 16th, 1975, at the age of 85.

Van der Corput's dissertation ("Over roosterpunten in het platte vlak – de betekenis van de methoden van Voronoï en Pfeiffer", Noordhoff, Groningen, 1919) was in analytic number theory. It contained a well-organized survey of the various methods for estimating the number of lattice points in a big circle and in the region between an orthogonal hyperbola and its asymptotes (the Dirichlet problem). All these methods led to the estimate $O(x^{1/3})$ for the error term, also for the more general regions he investigated. It was a very fine piece of work. Landau, the leading expert in the field at the time, was very much impressed.

It seemed a kind of harmony that suggested $O(x^{1/3})$ to be the right error term in all these problems, but in 1922 Van der Corput shocked the world by showing that the exponent 1/3 could be decreased (Math. Ann.

87 (1922), pp. 39–65). This work was based on his refined techniques for treating sums of exponentials and was certainly one of the deepest pieces of analytic number theory ever made. Some further improvements led him a few years later to the exponent 27/82. The method could be applied to the circle problem by his student L.W. Nieland, with the same error estimate $O(x^{27/28})$. Another problem attacked by the method was the order of growth of the Riemann zeta function, on which Van der Corput collaborated with his student J. F. Koksma.

Until about 1940 Van der Corput was extremely active in analytic number theory, with series of papers on Diophantine approximation, Vinogradov's method, Goldbach's conjecture, and Geometry of numbers. After 1940 Van der Corput added to his work on number theory an active interest in many other branches of mathematics. His earlier work on the asymptotic method of stationary phase initialized extensive work in his later theory of neutrices. He wrote on a wide variety of subjects, like the study of functional equations for the elementary functions, and a new proof for the fundamental theorem of algebra. Nevertheless he kept working in number theory too. Special attention might be given to what was the first complete account on the Erdös–Selberg elementary proof of the prime number theorem (Math. Centrum Amsterdam, Scriptum no. 1 (1948)).

Van der Corput was very stimulating as a teacher, and made his students collaborate with him on his best ideas. In particular four of his best students might be mentioned who all died before him: L. W. Nieland, J. F. Koksma, J. Popken, C. S. Meijer.

A very remarkable episode in Van der Corput's life was his initiative in 1946 to start a national institution for the promotion of both pure and applied mathematics, in order to give the mathematical background for the post-war industrial development in the Netherlands. This Mathematical Centre did indeed provide such a background in various areas, especially in statistics and computer science. Van der Corput was its first director (1946–1953).

The Royal Netherlands Academy of Sciences and Letters made Van der Corput a member in 1929. Furthermore he was honoured by doctorates honoris causa from the University of Bordeaux and from the Technological University at Delft, and by the membership of the Royal Academy for Sciences and Letters of Belgium.

Van der Corput was an editor of Acta Arithmetica from its start in 1936, and he had an article in its first volume.