Lennart Axel Edvard Carleson Biography

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Contents

Biography

Lennart Axel Edvard Carleson is Professor Emeritus of Mathematics at the Royal Institute of Technology (KTH) in Stockholm, Sweden. He is also a member of the faculties of the University of Uppsala, in Uppsala, Sweden, and the University of California at Los Angeles. Since his formal retirement at KTH in 1994, Carleson has held a senior professorship in the mathematics department there through an endowment provided by the Göran Gustafsson Foundation.

In 1966, Carleson proved the **theorem** that is named for him. The Carleson theorem states that the **Fourier series** for a square-integrable function converges almost everywhere, where terms are defined as follows:

- The Fourier series representation of a function is a representation of the function by a summation (over n) of the form $a_n\sin(nx/)$. A practical example would be the representation of a complex musical waveform by the sum of many frequencies.
- A square-integrable function is a function f for which the integral over x from a to b of the absolute value of $(f(x))^2$ exists.
- The term "almost everywhere" describes a situation in which a pair of **functions** f and g differ for sufficiently few values of x that all integrals involving f have the same values as those involving g.
- **Convergence** means that the Fourier series of a given function f(x) actually converges to f(x) at all points over the **interval** of the expansion.

Between 1969 and 1984, Carleson served as director of the Mittag-Leffler Institute, a part of Swedish Royal Academy of Sciences. During his tenure there, Carleson transformed Mittag-Leffler into the institute for mathematics research that the founder had envisioned in 1916. Carleson was successful in attracting the financial backing required to attract foreign mathematicians to the institute with fellowships.

In 1984, Carleson received the American Mathematical Society's Leroy P. Steele Prize for his papers: An *interpolation problem for bounded analytic functions* , American Journal of Mathematics, volume 80 (1958), pp. 921-930; *Interpolation by bounded analytic functions and the Corona problem*, Annals of Mathematics (2), volume 76 (1962), pp. 547-559; and *On convergence and growth of partial sums of Fourier series*, Acta Mathematica volume 116 (1966), pp. 135-157.

In 1992, Carleson was awarded the Wolf Prize in recognition of his fundamental contributions to Fourier **analysis**, **complex analysis**, and quasi-conformal mappings and dynamical systems.