Laurent Schwartz Encyclopedia Article

Laurent Schwartz

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Laurent Schwartz

1915-

French Mathematician

French mathematician Laurent Schwartz is known primarily for his work in functional analysis and the theory of distributions, an expansion of concepts relating to differential and integral calculus. He won the Fields Medal in 1950.

Born in Paris on March 5, 1915, Schwartz entered the Ecole Normale Supériure in 1934, and graduated in 1937 with the Agrégation de Mathématique. He then began his doctoral work at the University of Strasbourg, where he earned his Ph.D. in 1943. For a year between 1944 and 1945, Schwartz served as lecturer at the University of Grenoble, then took a professorship at the University of Nancy.

Schwartz's principal area of concern, and the one for which he earned the Fields Medal in 1950, was functional analysis. Earlier, British mathematicians Oliver Heaviside (1850-1925) and Paul Dirac (1902-1984) had generalized the differential and integral calculus for special applications. Among those who used these applications were physicists working with mass distributions. Prior to Schwartz's work, the most useful formula in this area was Dirac's Delta function, which had its limitations. In a 1948 paper, Schwartz presented a generalized function built on a stronger and more abstract foundation, one which expanded the range of applications to include areas such as potential theory and spectral theory.

In 1953, Schwartz became a professor at the Sorbonne, where he remained until 1959, then moved to the Ecole Polytechnique in Paris. In addition to the Fields Medal, he received prizes from the Paris Academy of Sciences in 1955, 1964, and 1972. Also in 1972, he was elected a member of the Academy. He has also been awarded honorary doctorates from universities around the world, among them Humbolt (1960), Tel Aviv (1981), and Athens (1993).

Schwartz left the Ecole Polytechnique in 1980 to teach at the Sorbonne for three years before retiring in 1983. Among the concerns of his later work is stochastic differential calculus.