

Pérès, Joseph Jean Camille | Encyclopedia.com

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(*b.* Clermont-Ferrand, France, 31 October 1890; *d.* Paris, France, 12 February 1962)

mathematics, mechanics.

The son and son-in-law of distinguished philosophers, Pérès entered the École Normale Supérieure in 1908, became *agrégé* in mathematics in 1911, and was immediately awarded a scholarship to enable him to earn a doctorate. Introduced by Émile Borel to Vito Volterra, he left for Italy to prepare his dissertation under the latter's supervision. He defended the dissertation *Sur les fonctions permutables de Volterra* in 1915, while teaching *mathématiques spéciales* at the *lycée* of Montpellier. After brief stays at the faculties of Toulouse and Strasbourg, he was from 1921 to 1932 professor of rational and applied mechanics at Marseilles, where in 1930 he founded an institute of [fluid mechanics](#). Called to the Sorbonne in 1932, he devoted his scientific efforts primarily to developing the field of [fluid mechanics](#). But his personal qualities led to his being burdened with ever more numerous and demanding duties. He taught at all the *grandes écoles* and from 1954 to 1961 was dean of the Paris Faculty of Sciences during a difficult time of expansion and profound transformation. Moreover, he fulfilled extensive responsibilities in several major national and international research organizations, notably the Centre National de la Recherche Scientifique and the International Committee of Scientific Unions.

Pérès won Prizes from the Académie des Sciences in 1932, 1938, and 1940 and was elected a member in 1942. He was a foreign member of the Accademia Nazionale dei Lincei, Accademia delle Scienze, and the [National Academy of Sciences](#), as well as an active member of the Académie Internationale d'Histoire des Sciences from 1948. Peres's positions and honors testify to his exceptionally fruitful life, devoted to the combination of teaching and research.

Volterra's initial influence on Pérès and their warm thirty-year friendship account to a large degree for the course of Peres's research, which was at first oriented toward pure analysis and then toward mechanics. The events of his career simply accentuated a development the outlines of which were determined at the outset.

Pérès's results on integral equations extended those of Volterra, notably regarding composition products of permutable functions with a given function and, later, the composition of functions of arbitrary order. These findings are now considered classical, as is his theory of symbolic calculus, which is more general than Heaviside's. Work of this type in analysis harmonized with the needs of fluid mechanics. In the latter domain, which experienced great progress in France through Peres's efforts, his work was linked in large part to that of other researchers. Aiming at various applications, especially in aeronautics, Pérès conducted studies on the dynamics of viscous fluids, on the theory of vortices, and on movements with slip streams while refining the method of electrical analogies. In constructing his "wing calculator," as well as analogous devices—for measuring the pressure of lapping waves on jetties, for example—Peres remained in close contact with those testing the equipment. To his scientific colleagues he remained a circumspect theorist, animator, and promoter.

At the beginning of his career Pérès obtained two results, now bearing his name, that are not connected with the fields mentioned above. One concerned Levi-Civita parallelism (1919); the other, impact with friction (1924). In the second area he achieved one of the last great successes of rational mechanics. The gift for theoretical speculation manifested in these investigations remained the mainspring of his work and of his influence, and the fruitfulness of both is explained by his openness to new ideas.

BIBLIOGRAPHY

I. Original Works. Pérès's books include *Sur les fonctions permutables de Vito Volterra* (Paris, 1915), his *diss*; *Leçons sur la composition et les fonctions permutables* (Paris, 1924); *Les sciences exactes* (Paris, 1930); *Cours de mécanique des fluides* (Paris, 1936); *Tables numériques pour le calcul de la répartition des charges aérodynamiques suivant l'envergure d'une aile* (Paris, 1936), written with L. Malavard and L. Romani; *Théorie générale des fonctionnelles* (Paris, 1942), submitted with his candidacy to the Academy; and *Mécanique générale* (Paris, 1953).

Among his memoirs published in the *Comptes rendus* of the Academy are "Actions d'un fluide visqueux sur un obstacle," **188** (1929), 310–312, 440–441; "Sur le mouvement limite d'Oseen," **192** (1931), 210–212; "Sur les analogies électriques en hydrodynamique," **194** (1932), 1314–1316, written with L. Malavard; "sur le calcul analogique des effets de torsion," **211** (1940), 131–133, written with L. Malavard; "Sur le calcul expérimental," *ibid.*, 275–277; and "Calcul symbolique d'Heaviside et calcul de composition de V. Volterra," **217** (1943), 517–520.

His other noteworthy works include the editing of *Leçons sur les fonctions de lignes de Vito Volterra* (Paris, 1913); “Le parallélisme de M. Levi-Civita et la courbure Riemannienne,” in *Rendiconti. R. Accademia dei Lincei* (June 1919); “Choc avec frottement,” in *Nouvelles annales de mathématiques*, **2** (1924); Peres edited this journal, with R. Brocard and H. Villat, from 1923 to 1927; “Une application nouvelle des mathématiques à la biologie, la théorie des associations biologiques,” in *Revue générale des sciences* (1927); and “Les divers aspects de la mécanique. Quelques notions concernant son enseignement,” in *Mécanique*, no. 322 (Feb. 1944), 27–29.

II. Secondary Literature. On Pérès and his work, see the notices by P. Costabel, in *Archives internationales d'histoire des sciences*, **15** (1962), 137–140; H. Villat, in *Comptes rendus ... de l'Académie des sciences*, **254** (1962); and M. Zamansky, in *Revue de l'enseignement supérieur*, no. 2 (1962), 95–97.

Pierre Costabel