

📖 Topic Page: [Landau, Lev Davidovich \(1908 - 1968\)](#)

Definition: **Landau, Lev Davidovich** from *Philip's Encyclopedia*

Soviet physicist. In 1927, he proposed a concept for energy called the density matrix, later used extensively in quantum mechanics. He originated the theory that underlies the superfluid behaviour of liquid helium. In 1962, he received the Nobel Prize in physics for his research into condensed matter, especially helium.

Summary Article: **Landau, Lev Davidovich**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

Russian theoretical physicist. He was awarded the Nobel Prize for Physics in 1962 for his theories of condensed matter, especially liquid helium.

Landau was born in Baku, Azerbaijan. His father was an engineer in the oil industry and his mother was a doctor. At age 14 he entered Baku University and at 16 transferred to Leningrad State University. He graduated in 1927 and two years later he won a fellowship to visit foreign scientific institutions. This enabled him to work with Niels Bohr in Denmark. In the 1920s Landau formulated his first major scientific contribution, the theory of diamagnetism in metals. In 1932 he became the head of the Ukrainian Physico-Technical Institute, where he began working on phase transitions of the second kind (subtle changes that do not involve heat exchange), including the superfluidity of helium, and ferromagnetism. Landau was an excellent teacher and his nine volume *Course of Theoretical Physics*, written with his student Evgeni Lifshitz, remained in print until the 1980s.

Landau had been an ardent communist during the 1920s, but he became increasingly disillusioned as pure science suffered in deference to military and technical applications and he was no longer free to chose his own research directions. Landau was imprisoned in 1938 for anti-Stalinist activities, as the head of a counterrevolutionary organization. He remained in prison for a year. In the 1940s Landau worked on the hydrogen and atomic bomb projects for which he received two Stalin Prizes (1949 and 1953) and in 1954 he was awarded the title Hero of Socialist Labour. The brain injuries he sustained in a car crash in 1962 changed his personality and put an end to his research.

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