

**"The theory of a Fermi-liquid" and "Oscillations in a Fermi-liquid" by  
L.D. Landau published in 1956 and 1957**

The collection "JETP Golden Pages" is opened by two papers by L.D. Landau ["The theory of a Fermi-liquid"](#) and ["Oscillations in a Fermi-liquid"](#) in which he established the theory of Fermi-liquid: one of the most substantial parts of modern condensed matter physics. In the introductory part of the first paper he formulated the following question for the theory. To which extent one can apply the gas model to the description of properties of Fermi systems, for example, electrons in metals, "since it is not clear which features of gas model are real and which ones are properties of gases?" The developed theory does not use assumption of weak interactions and answered the posed questions (as well as many others arisen in theory applications) in full. The theory as it was described in these two papers is applicable to liquid  $^3\text{He}$ . The theory predictions for liquid  $^3\text{He}$  were successfully supported by experiments. The Fermi-liquid theory is used to successfully describe such Fermi systems as electrons in metals, neutron stars, and heavy nucleus. Understanding of importance of the Fermi-liquid theory came not only with its successful applications to various systems but derivation of its main assumptions from microscopics. The starting point of such microscopic approach was one of subsequent papers by L.D. Landau [1].

[1] L.D. Landau, On the theory of the Fermi-liquid, Sov. Phys. JETP 8, 70 (1959).

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