

Abstract Submitted  
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**Fermion condensation: a strange idea successfully explaining behavior of numerous objects in Nature** M. YA. AMUSIA, Racah Institute of physics, VASILY SHAGINYAN — Strongly correlated Fermi systems are fundamental systems, lacking theoretical understanding. Ideas of quantum and thermal fluctuations at a quantum critical point (QCP) have been put forward and the non-Fermi liquid (NFL) behavior of these systems was attributed to fluctuations. But these ideas failed to describe other properties. Facts about heavy-fermion (HF) metals and two dimensional (2D)  $^3\text{He}$  demonstrate very high values of the quasiparticle effective mass  $m^*$ . Fermion condensation quantum phase transition preserving quasiparticles and related with unlimited growth of  $m^*$  is capable to describe strongly correlated systems. In that case  $m^*$  becomes temperature, density, magnetic field etc. depended but the very concept of Landau quasiparticles remains untouched. We found that despite different microscopic nature of 2D  $^3\text{He}$  and HF metals, both exhibits the same NFL behavior at QCP. NFL behavior is universal and independent of the peculiarities of Fermi-system.

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