

Commemorating Lev Petrovich Pitaevskii

Monday, 11 September 2023 09:55 (35 minutes)

With this commemorative talk, we pay tribute to the exceptional life and profound scientific contributions of Lev Pitaevskii, a world-leading scientist and mentor. The presentation provides a sincere reflection on his remarkable academic and scientific journey, encompassing significant milestones from writing a letter to Lev Landau in his youth, entering doctoral studies in Landau's group, working in Moscow and eventually moving to Trento, Italy where he worked until the last moment.

Lev Petrovich Pitaevskii's worldwide recognition stems from his invaluable contributions as an author and editor of one of the most celebrated courses on Theoretical Physics. This talk pays homage to his pivotal role in shaping our understanding of various fields, including Casimir forces, the excitation spectrum of superfluid helium (known as the "Pitaevskii plateau"), plasma physics, dilute gases (Gross-Pitaevskii theory), and much more. For a better idea of this extraordinary person, a collection of photographs will be presented that capture the different stages of Lev's prodigious life. These photographs offer a glimpse of his long eventful life and scientific path of a great scientist. Additionally, this talk includes my personal recollections, reflecting the impact that Lev Petrovich had on my own academic development. In Italy, at the University of Trento, I had the opportunity to study and defend my doctoral dissertation under his scientific supervision and I collaborated with him since then.

I will present a short overview of an article in which we studied fluctuations in ultracold gases at zero temperature. While the fluctuation in the number of atoms within a specific volume exhibits a linear relationship with volume size in thermal systems, this pattern does not hold true in the ground state. This intriguing phenomenon, known as anomalous fluctuations, manifests in compressible quantum systems (whether bosonic or fermionic) across various dimensionalities. While, in principle, the effect can be observed directly in the snapshots of the atom density, practical realization necessitates the capability to experimentally resolve distances significantly smaller than the thermal de Broglie wavelength. The experimental validation of these anomalous fluctuations would unequivocally underscore the exceptional nature of quantum systems.

Through the narration of personal anecdotes and treasured memories, my intention is to reveal the multifaceted nature of Lev Petrovich's personality. It is my endeavor to portray him not solely as a world-class scientist and exceptional teacher, but also as a person of profound humility, a devoted spouse, and a loving father. This talk is a tribute to the memory of the brilliant scientist Lev Petrovich Pitaevskii, whose achievements will forever remain in the history of world physics,

References

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