

The Structure, State and Properties of Matter in Bose-Einstein Condensate

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Abstract: Shows the fundamental structure, state and properties of matter in Bose-Einstein condensate in a new perspective and according to a new theory of atomic structure.

Main Viewpoints and Conclusions:

In the characteristic critical low temperature of a kind of material, all atoms of the material at the same energy level of their ground state, the extranuclear-charges of all atoms with the same density and polymerized into a single complete whole and agglomerate together with all nucleuses, the state of matter is called Bose-Einstein condensate (BEC).^{[1][2]}

In Bose-Einstein condensate (BEC), all extranuclear-charges of any atoms of the material polymerized together and form into a single complete charge-body which with a uniform and consistent volume density. Inside the charge-body, any of the same size and shape of the charge-body all have the same and equals volume charges density, mass, natural frequency and energy level. On the whole, the charge-body (the material) is a single and complete harmonic oscillator which with an only, non-discrete and no more small-scale even sub-quantum behaviors energy level.

In comparison with the other states of matter, when a material is in the Bose-Einstein condensate (BEC), the volume and quality of the extranuclear charge-body reaches its maximum value due to it is in the highest integration level of the extranuclear-charges, and any part of the extranuclear-charges that separate from the main charge-body does not exist; the distribution of the extranuclear-charges reaches into the most uniform and densest, no cracks and voids inside the charge-body; both the volume charges density and energy level of the charge-body in its minimum value; it with a extremely low natural frequency and a huge relaxation cycle, accordingly, the energy that input from external, will be stranded for an extremely long time in the interior of the charge-body before it exported and released.

References

[1] *Bose-Einstein condensate*

https://en.wikipedia.org/wiki/Bose%E2%80%93Einstein_condensate

[2] *A New Model of Atomic Structure*

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