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## Some special topics in quantum mechanics

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**K**inetic energy is a non-zero positive value in many cases of bound states, when a wave function is a real-valued one and there are no visible motion and flux. This can be understood, using an expansion of the wave function into Fourier integral, that is, on the basis of virtual plane waves. This explanation had been proposed by the author in 1963, when the author had been studying Quantum Mechanics. Self-action in a system of particles, charged with elementary charge is discussed in details. This self-action is not taken in account in Quantum Mechanics, because otherwise experimental data (including data on atomic spectra) could not be theoretically explained. In Quantum Mechanics sometimes there is an electrostatic field without any electrostatic energy stored in it, and electrostatic negative energy with no electrostatic field, like in positronium. Criteria for low-dimensional quantum movements are derived and rotation of modern objects is discussed. Simplified theory of polarons and bipolarons is proposed and simple explanation of coexistence of zero angular momentum and non-zero magnetic moment in many-electron system is discussed.

## Biography

Yuri Korniyushin graduated from Taras Shevchenko State University in Kiev, Ukraine, in 1965, was awarded PhD degree in 1967, and Dr Sci degree in 1984. During his career he worked on Physical Bases of Materials Science. From 1965 to 1990 he worked in The Institute for Metal Physics of NAS of Ukraine in Kiev, and from 1991 to 2001 in the Hebrew University in Jerusalem.

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