MODEL OF THE NON-COMMUTATIVE OPERATORS OF COORDINATES AND MOMENTA OF DIFFERENT PARTICLES

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It is shown that the Schrödinger equation for a system of interacting particles whose Compton wavelengths are of the same order of magnitude as the system size has contradictions and is not strictly non-relativistic, because it is based on the implicit assumption that the velocity of propagation of interactions is finite. In the framework of the model of the non-commutative operators of coordinates and momenta of different particles, the equation for wave function which has no above-mentioned drawbacks is deduced. The significant differences from solutions of the non-relativistic Schrödinger equation for large values of the interaction constant are found and the comparison of analogous results for hydrogenlike atoms with experimental data is carried out.