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The necessity of remoulding quantum mechanics and its direction of remoulding

Pang Xiao Feng

University of Electronic Science and Technology of China, China

The difficulties and contradictions of quantum mechanics, which is the foundations of model science, are first described and L elucidated in detail and systematically by many experimental facts and theoretical results obtained from the solutions of basic Schrödinger equation in virtue of their comparisons with the objective and intrinsic features of the microscopic particles having wave and corpuscle. These existed difficulties and contradictions focus mainly the properties of basic Schrödinger equation, of which the solutions have only a wave feature, not corpuscle feature since no other interactions can be used to restrain the dispersed effect of microscopic particle arising from the kinetic energy in Hamiltonian systems, thus quantum mechanism describes only the wave feature, cannot represent the wave-corpuscle duality of microscopic particles. This is fully not consistent with people's traditional knowledge. These results lead to a series of difficulties and contradictions in quantum mechanics, which is only an approximate theory. In such a case, it is very necessary to eliminate and solvate these difficulties and contradictions for promoting the development of quantum mechanics toward. Our research discovered that these difficulties and contradictions can be eliminated, if a nonlinear interaction, which is closely related to the states of microscopic particles, is added in the basic Schrödinger equation and Hamiltonian systems. From the solutions obtained from different Schrödinger equation, we affirmed that they have an evident and clear wave-corpuscle duality because the nonlinear interaction restrained the dispersed effect of microscopic particle arising from the kinetic energy, then the microscopic particles are localized. This means that the microscopic particles described by the Schrödinger equation including the nonlinear interaction possessed certainly a wave-corpuscle duality, which corresponds perfectly with their intrinsic features. Then the difficulties and contradictions of quantum mechanics were through eliminated. Meanwhile, we investigated and elucidated further the real and wide existences of the nonlinear interaction in all physical systems, they are formed and produced by means of four mechanisms of selfinteraction, self-trapping, self-focusing and self-localized. Thus we affirmed and confirmed that the dynamic properties of microscopic particles should be described by the nonlinear Schrödinger equation and nonlinear quantum mechanics, instead of linear Schrödinger equation in quantum mechanics.

pangxf2006@aliyun.com