SOME PROPERTIES OF DENSITY MATRIX IN PHYSICS OF INTERACTION OF PARTICLE WITH A CONDENSED MATTER

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Abstract

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The density matrix (DM) is a function on seven variables – six space and one time variable and therefore it contains a much more information about the particle's wave field (PWF) in comparison with the wave function. One can be of meaning that all this additional information which contains in DM isn't important and may be omitted in explanations of all the physical effects. But this point of view cannot be accepted because the DM is the simplest possibility to describe the properties of the PWF. We should keep in mind that the projectile which interacted with the environment don't be described by the wave function – the wave function can be defined only for the total quantum system. This circumstance forces us to give a physical meaning to all the properties of DM. The change in the size of PWF in interaction with the solid is analyzed. The creation of resonance states of projectile during the time of flight across the solid film as well as the explanation of breaking of the PWF during the interaction are found.



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