

Quantum dynamics in tomographic representation of quantum mechanics

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This work is devoted to the development of a new stochastic approach to numerical solution of the evolution equation for marginal distribution function in the center-of-mass tomography representation of quantum mechanics. The idea of tomography representation is to linearly transform the reference frame in the phase space by means of the so-called Radon transformation and use new variables for the construction of non-negative distribution function. This tomographic representation completely describes either quantum or classical state of the system in the framework of one and the same formalism. We discuss the basic relations and main ideas of this approach, compare obtained numerical results with independent calculations for quantum oscillator, quantum particle scattering by potential well and barrier and quantum particle tunneling through the barrier. We also consider a possibility of creating of a new method of quantum dynamics in tomographic representation for investigation of different properties of strongly coupled systems.