

QUANTUM EVOLUTION OF THE VERY EARLY UNIVERSE

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S u m m a r y

A consistent quantum cosmology for the Universe right after the Big Bang is proposed. The stationary state spectrum and the wave functions of the quantum Friedman Universe originally filled with a uniform scalar field and a perfect fluid, which defines a reference frame, are calculated. It is shown that the matter-energy in the Universe has a component in the form of a condensate of massive zero-momentum excitation quanta of oscillations of the primordial scalar field. It is demonstrated that the process of nucleation of the Universe from the initial cosmological singularity point can have an exponential (explosive) nature. The evolution of the Universe is described as transitions with non-zero probabilities between the states of the Universe with different masses of the condensate.