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Dark components of the universe

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The dark sector of the universe is beginning to be clarified step by step. If the dark energy is vacuum energy, then the 123 crisis orders of this energy are exactly reduced by conventional physical processes. Vacuum energy was spent for organization of new microstates during expansion of the Universe. In the quantum regime phase transitions were more effective in reducing the vacuum energy than production of new microstates. Important problems of cosmology and physics may be decided if quarks, leptons and gauge bosons are composite particles. The preon model provides a natural explanation of dark matter, which may consist of pseudo-Goldstone bosons of familon type with a mass $m \sim 10^{-3} \div 10^{-5}$ eV. In this model three generations of elementary particles are necessary in our Universe. This model realizes some relativistic phase transitions on different red shifts to produce a large scale structure of dark matter which was repeated by baryons. As the result we wait detection of familons, finding dark energy dynamics and development of spectroscopy of atomic dark medium. We will discuss influence of a magnetic world of Schwinger on the initial evolution of the universe.

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