

PHYSICS BEYOND THE STANDARD MODEL IN COSMOLOGICAL PLASMA

Maxim Yu Khlopov

Astroparticle and Cosmology (APC) Laboratory Paris, France

National Research Nuclear University MEPhI (Moscow State Engineering Physics Institute) Russia

Modern inflational cosmology with baryosynthesis, dark matter and dark energy is based on physics beyond the standard model of elementary particles. It implies new types of particles and their interactions and their effects, add new features to the behaviour of cosmological plasma and its possible forms. New types of stable charged particles and the reasons why they are elusive for experimental searches are discussed. New types of Coulomb-like interactions possessed by new particles lead to new forms of cosmological plasma and we consider examples of alternating current (AC) particles of almost commutative geometry, 4th generation in heterotic string phenomenology and mirror or shadow matter and possible methods to test the ideas on the corresponding dark photons in experiments and observations.

khlopov@apc.in2p3.fr