DYNAMICS OF COSMIC BODIES IN THK OPEN UNIVERSE

Alexandra Kudinova, Maxim Eingorn, Alexander Zhuk
Department of Theoretical Physics
Astronomical Observatory
Odessa National University

As it has been recently demonstrated, the mathematical model with the hyperbolic space (or, in other words, with the negative spatial curvature) is the most appropriate for describing the inhomogeneous Universe at late stages of its evolution in the framework of the theory of scalar perturbations.

We develop the dynamical approach in this model and investigate nonrelativistic motion of two, three and even more cosmic bodies against the cosmological background, perturbed locally by density inhomogeneities (namely, galaxies). For arbitrary initial conditions, we get solutions of equations of motion (trajectories), demonstrating most important features of the cosmological expansion, only slightly restrained by gravitational attraction. Our methods can be used for indirect observations of dark energy and dark matter.