Abstract

The energy density of the universe is estimated to be composed of 68% dark energy. Dark energy is associated with the accelerated expansion of the universe. In this work, we consider the evolution of the number density n(z) and light intensity I(z) of galaxies with redshift z for a matter-dominated Friedmann universe in the presence of dark energy and compare the results with a matter-dominated Friedmann universe without dark energy effects. Computational results of n(z) and I(z) are presented in a suitable form for comparison with future observed dependencies to test the fractal-homogeneous models of open, closed and flat matter-dominated universe. From our results, there was increased structure formation in the universe from z=0 to z≈1 when the rate of growth started to slow down. Furthermore, there is reduced structure formation for a universe driven by dark energy as compared to one without dark energy.