

PHYS 480/581 Cosmology

Worksheet #4
Wednesday 08/31/2022

Question 1.

As we discussed, the Friedmann equation takes the form

$$\left(\frac{\dot{a}}{a}\right)^2 = \frac{8\pi G}{3}\rho(t), \quad (1)$$

in the absence of spatial curvature. Determine the evolution of the scale factor $a(t)$ in the case when the energy density appearing on the right-hand side of the equation is constant $\rho(t) = \rho_\Lambda = \text{constant}$. Does this universe have an extra symmetry compared to what is required by the cosmological principle?