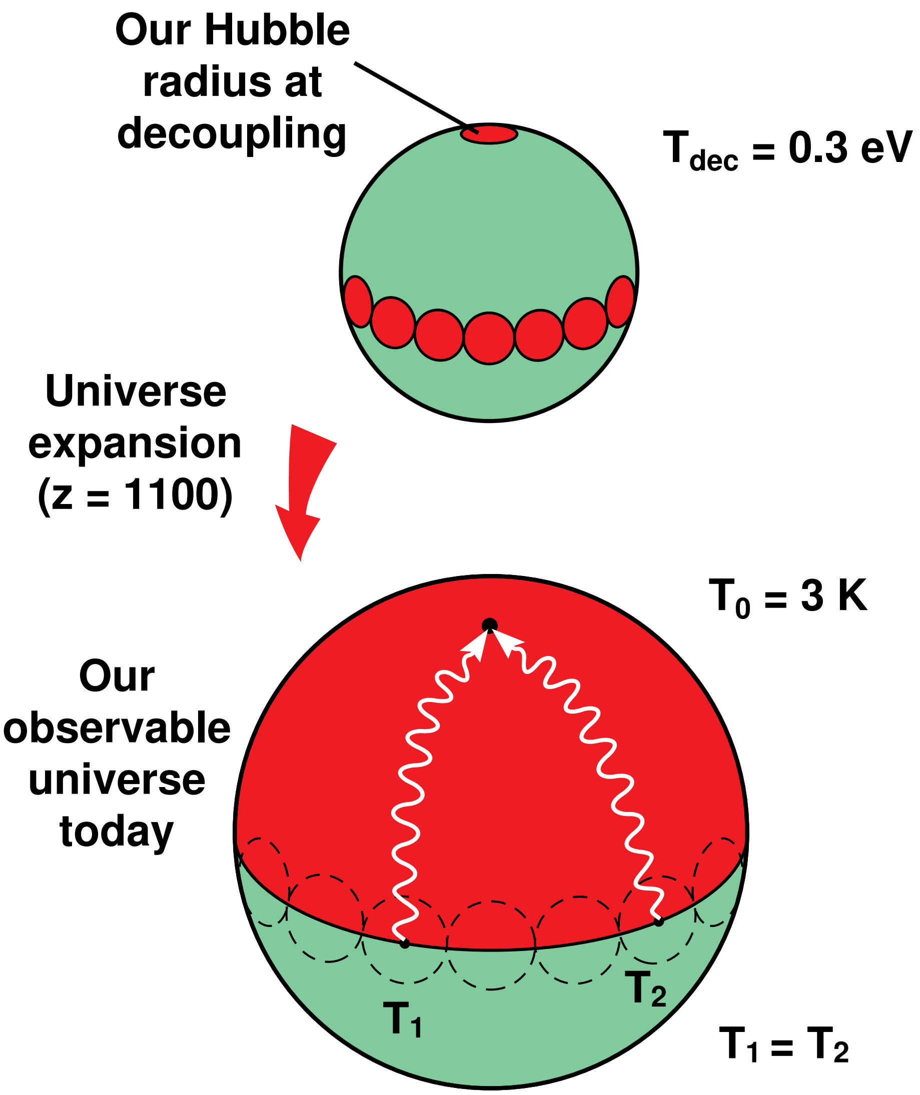

Figure 4. Perhaps the most acute problem of the big bang model is explaining the extraordinary homogeneity and isotropy of the microwave background. Information cannot travel faster than the speed of light, so the causal region (so-called horizon or Hubble radius) at the time of photon decoupling could not be larger than 300 000 light-years across, or about one degree projected in the sky today. So why regions that are separated by more than a degree in the sky should have the same temperature, when the photons that come from those two distant regions could not have been in causal contact when they were emitted. This constitutes the so-called horizon problem, which is spectacularly solved by inflation.