

HW #3 (229C), due Oct 21, 4pm

1. Using the conservation of n_b/s and the current value $n_b/n_\gamma = 6.5 \times 10^{-10}$, work out the asymmetry in the quark number

$$A_q \equiv \frac{n_q - n_{\bar{q}}}{n_q + n_{\bar{q}}} \quad (1)$$

before the QCD phase transition.

2. Work out the redshift at the matter-radiation equality.
3. Work out the redshift at the photon decoupling.