Astronomy 6 – Introductory Cosmology
Fall 2013

Class 9 and beyond
Friday, November 22

Today, we'll discuss the following topics, both of which will continue with additional reading and then discussion in our next class meeting.

1. Consensus Model

    a. How do we know about each component?

    b. What are the implications of the particular values of the component densities? E.g. what are the time frames over which a given component dominates? And what the growth of the scale factor looks like in each case. Compare our *Mathematica* plots to Figs 24.3 and 24.4.

    c. How do observations of H(t) allow us to constrain the cosmological constant (i.e. how does the accelerating universe tell us about dark energy)?

2. Dark Matter

    a. Review briefly lensing results and galaxy counting based results from last time

    b. Gravitational effects (in addition to lensing): orbital dynamics

Schedule:

Class 10: Wed, Dec 4
Class 11: Fri, Dec 6
Class 12: Mon, Dec 9
Class 13: Wed, Dec 11 (?) or Mon, Dec 2 (?)

Topics/plan/syllabus:

Dark Matter and the Bullet Cluster: Clowe et al. and Physics Today article. Maybe some more general background, too.

Accelerating universe and dark energy: Sec. 2 of Ch. 24 plus an article from American Scientist (with some theoretical interpretation)

Early Universe and Big Bang Nucleosynthesis: Sec. 3 of Ch. 24 plus a supplementary article (?) (also CMB anisotropies?)

Big picture and open questions: Inflation (Sec. 4 of Ch. 24)…fine-tuning and the Multiverse (Jim Holt article)