

Reading Assignment and Suggestions (4)

1. Pagel- Chapter 4
Iliadis - pp 553-559

Both cover the nucleosynthesis at a similar level with Pagel providing a more detailed discussion of the evolution of Big Bang prior to the brief episode of nucleosynthesis.

2. Observational tests of Big Bang Nucleosynthesis continue. Presently, the major 'problem' is a striking disagreement between the predicted lithium (${}^7\text{Li}$) abundance and that inferred from the lithium abundance in very metal-poor stars. We'll discuss this issue.

Recent papers have also highlighted the observation and prediction of the deuterium and ${}^3\text{He}$ abundance. See

- A News and Views piece in Nature by Prantzos, Nature, 529, 33, 2016
- Big Bang Nucleosynthesis and the Helium Isotope Ratio by Cooke, ApJ Letters 812, L12, 2015
- New Reaction Rates for improved primordial D/H evolution and the cosmic evolution of deuterium, Coc et al., Phys. Rev. D, 92, 123526, 2015.

A rather comprehensive discussion of BBN theory and observations is given by Cyburt et al. in Big Bang Nucleosynthesis: 2015 (astro-ph 1505.01076).

3. Your 10-minute presentations.

I suggest that the presentations and certainly the accompanying SHORT (1 to 2 pages) papers be constructed in the style of many abstracts to papers in Astronomy and Astrophysics. That is Aims/Methods/Results/Conclusions.

Or follow the similar convention of Physical Review for abstracts: Background/Purpose/Method/Results/Conclusions

In the class syllabus, I ask for each student to give a talk in each of the three areas - Stellar evolution and nucleosynthesis, Nuclear astrophysics, and Galactic Chemical Evolution. Each presentation should be accompanied by the 1-2 page paper mentioned above.