

Reading Assignment 5

1. For the next several classes, we shall discuss nuclear burning stages beginning with hydrostatic H-burning.

It will be helpful to read

- Pagel, Chapter 5
- Iliadis, Chapter 5
- Phillips, Chapters 4 and 5

2. For the nuclear physics of H-burning under solar conditions, please see

- Adelberger et al. 2011, Rev. Mod. Phys., 83, 195 and the 1998 precursor article also in Rev. Mod. Phys.
- A review of the cold and hot CNO Cycles is provided by Wiescher et al. 2010, Ann. Rev. Nucl. Part. Sci. 60, 381

3. Discussion of the nucleosynthesis accomplished by the pp-chains and the CNO cycles is thoroughly discussed by Iliadis in his Section 5.1.

- Note that the pp-chains dominate over CNO-cycles at low T (why?)
 - see his Figure 5.12 and Pagel Figure 5.5
- The CNO-cycles are in fact four cycles (Iliadis, Figure 5.8; Pagel Figure 5.6).
Under what conditions, if any, will full equilibrium be reached for all four cycles?

4. For a fine introduction to the concept of non-LTE in stellar atmospheres please see M. Bergemann astro-ph 1403.3089.