

LOW Z

This test is to show the evolution of a $0.8 M_{\odot}$ low metallicity ($Z = 10^{-4}$) star from the pre-main sequence to the main sequence. The run should be cut off when the effective temperature reaches 6600 K (`Teff_upper_limit = 6600`).

The HR-diagram below (figure 1) shows the Hayashi track and the beginning of the main sequence, starting in the upper right corner.

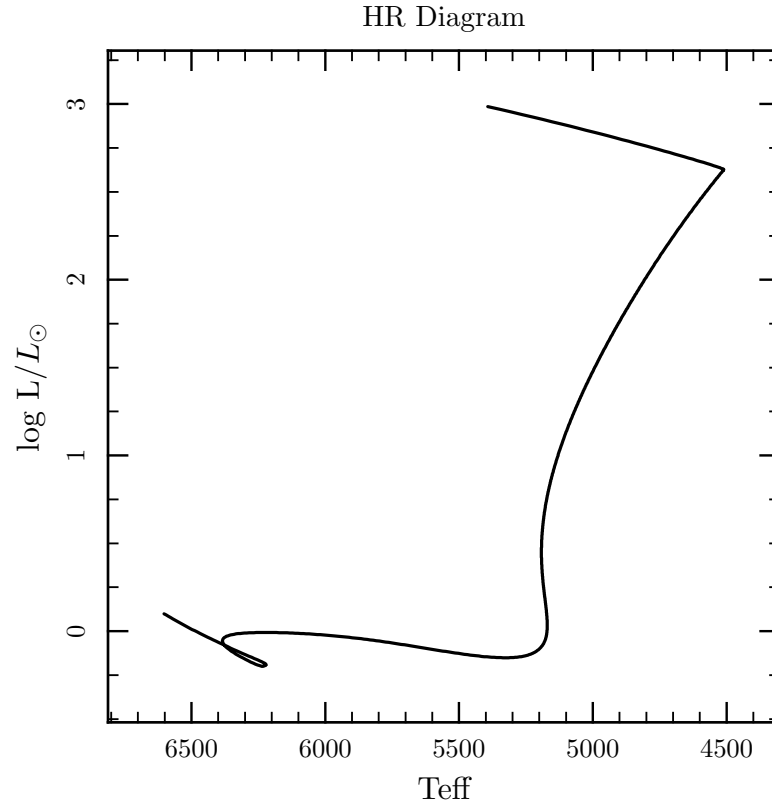


Figure 1: HR-diagram, evolution start in upper right corner

The two abundance profiles below taken from the start (figure 2) and the end (figure 3) of the run show that the abundances in the envelope change very little, and that hydrogen in the core is being consumed.

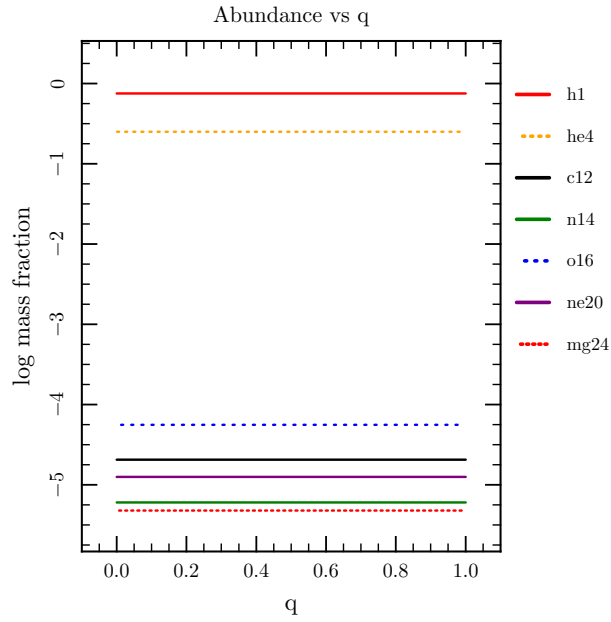


Figure 2: Abundance profile at start of run

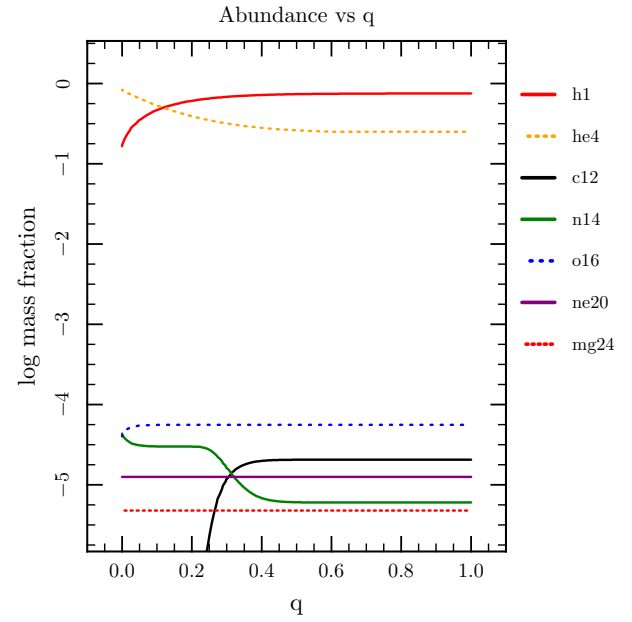


Figure 3: Abundance profile at end of run

The plot to the left (figure 4) shows the evolution of star's radius. To the right is a burning rate profile (figure 5) from the end of the run.

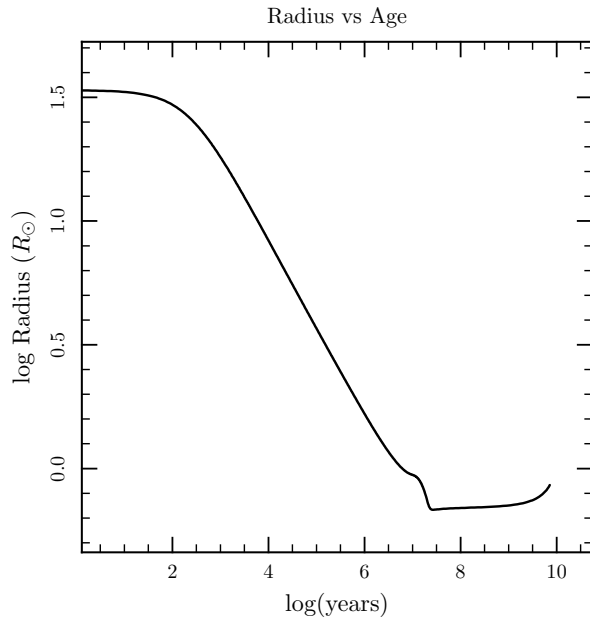


Figure 4: Evolution of radius

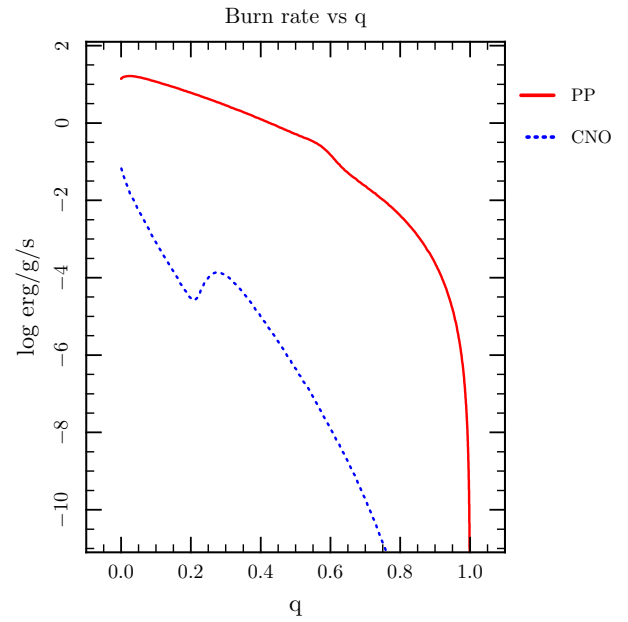


Figure 5: Burning rate profile from the end of the run

This final plot (figure 6) shows a few internal MESA variables, such as the size of the time-step, the number of zones, and the number of retries against the model number in order to give some understanding of how hard MESA is working throughout the run and where some areas of problems/interest might be.

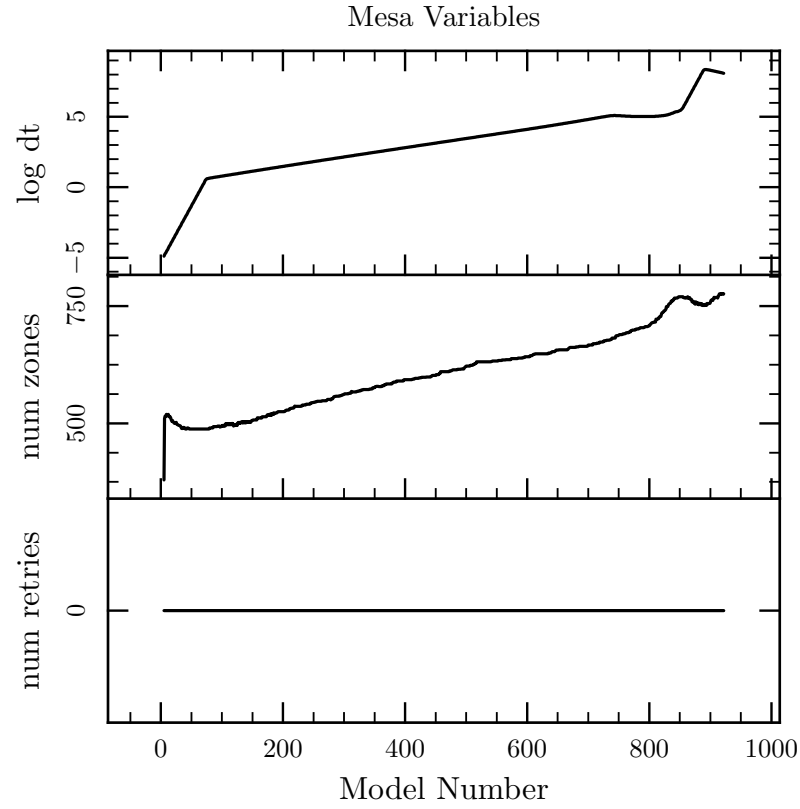


Figure 6: MESA variables plotted against model number show how hard MESA is working