

## Astrophysical Thinking - to be submitted in May 3rd

### 1. Stars

(a) **Stellar Evolution:** As the Sun evolved towards the main sequence, it contracted under gravity while remaining close to hydrostatic equilibrium, and its internal temperature changed from about 30,000 K to  $\sim 6 \times 10^6$  K. Estimate the change in stellar radius during the Sun's contraction.

(b) **Stellar lifetime:** How does stellar lifetime scale with mass? What mass of star could still exist from near the the beginning of the universe?