

13.06.2014

Problems

1. The Crab nebula has the linear size of 1,35 parsec and its expansion velocity measured from Doppler shifts in the emission lines is 1400 km/s. When did the supernova explosion occur?
2. Assuming that 70% of initial mass of the Sun was Hydrogen, for how long the Sun can radiate its energy in a stable way by synthesizing Helium? The stable Hydrogen burning in the core proceeds until 10% of Hydrogen is used, but then the shell burning may occur.
3. Compare the results of point 2. with the estimated timescale, for which the gravitational contraction of our Sun could be the source of its energy, radiated at a current rate.

(due date: 26.06.2014)