

- Try it yourself:
 - How much energy has been stored into the star during its collapse?
 - How much time does Sun have to radiate away that energy?
 - What is the central temperature of the Sun?
- Condition for nebular collapse
 - Jeans' mass
 - Jeans' radius
- Try it yourself:
 - typical diffuse hydrogen nebulae have $T=50\text{K}$, $n=500$ particles/cm³ and typical masses between $1-100M_{\text{Sun}}$. Will such nebulae contract into protostars?
 - Trapezium nebula has $T=150\text{K}$ and $n=10^8$ particles/cm³. What is the nebula's maximal size?
- Homologous collapse
- Try it yourself:
 - what is the homologous collapse timescale for the Trapezium nebula?

Useful quantities:

$$m_{\text{H}} = 1.67 \times 10^{-27} \text{ kg}$$
$$k_{\text{B}} = 1.38 \times 10^{-23} \text{ J/K}$$
$$M_{\text{Sun}} = 2 \times 10^{30} \text{ kg}$$
$$R_{\text{Sun}} = 696,000 \text{ km}$$
$$L_{\text{Sun}} = 4 \times 10^{26} \text{ W}$$