

Astrophysics 3; Semester 1; Worked Example

Various boundaries on temperature-density plane

On the $\log T$ - $\log \rho$ plane,

- (a) sketch the electron degeneracy boundary given by $\epsilon_F \sim kT$.
- (b) sketch two boundaries for the onset of relativistic effects given by $kT \sim m_e c^2$ and $\epsilon_F \sim m_e c^2$.
- (c) sketch the radiation pressure boundary given by $\frac{1}{3}aT^4 \sim \frac{\rho}{m}kT$.