
ASTRO C207 Radiative Processes in Astrophysics

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Problem Set 8

1. Saha and the Redshift of Recombination

- electron de Broglie wavelength: $\lambda = \frac{h}{\sqrt{2\pi m k_B T}}$
- electron degeneracy: $\xi \equiv n_e \lambda^3 \approx 4.1(10^{-16}) n_e T^{-\frac{3}{2}}$
- $\gamma \equiv \ln(\frac{1}{\xi})$
- Assume $U_*(T) \propto T^0, \approx 1$

(1)

(2)

(3)

2. Pulsar Dispersion Measure

(1)

(2)

(3)

(4)