Radiative Processes

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1. Eddington limit

The Eddington limit is the luminosity at which the force due to radiation balances gravity, so a particle in the neighbourhood of a source radiating at the Eddington limit is just held up against the gravity of the source.

2. Bremsstrahlung

The emission per unit volume per unit time from an optically thin plasma at temperature T, with ion density n_i and electron density n_e, due to electron-ion collisions is

$$4\pi j = 1.4 \times 10^{27}\, T^{1/2}\, n_e n_i \text{ erg cm}^3 \text{ s}^{-1} \quad (n_i \text{ and } n_e \text{ in cm}^{-3}).$$

3. Kramers opacity

The cross-section for the absorption of radiation in a plasma of number density n, (mass density ρ) at temperature T, is given by $\sigma n = \kappa\rho$, where

$$\kappa = 3.4 \times 10^{23}\, \rho T^{-7/2} \text{ g}^{-1} \text{ cm}^2,$$

with ρ in gm cm^{-3} and T in Kelvin.