

Stellar atmospheres

Compulsory Home Exercises. Problem Set 3.

Return by Wednesday, October 30, 2019 (before the exam).

Please, write down every step in your line of thinking and state assumptions etc.
A sole answer is not enough.

1. In terms of the specific intensity I , which of the listed below is the correct expression for the amount of radiation flowing per unit time, per unit solid angle through a unit area at an angle to the normal?
 - (a) $I \sin \theta$
 - (b) $I \theta$
 - (c) $I \cos \theta$
 - (d) $I \cos \theta \sin \theta$
 - (e) I
2. Which 2 opacity sources do dominate in a stellar atmosphere ($T=8064$ K, $P_e=30$ dyn/cm²) at 5000\AA and 18000\AA ? Is the contribution of the second one is negligible enough to be not taken into account?
3. Calculate the ratio of the absorption coefficients due to bound-free absorption above and below the Balmer edge (Balmer jump) for a hydrogen atmosphere with $T=9520$ K.