

FYS 3610

EXERCISES WEEK 45

Describe the Northern Lights Phenomenon.

- 1) Orientation of the Earth's magnetic field, and location of the Auroral oval.
- 2) Source plasma : Day and Night
- 3) Auroral emission lines /bands (0.1 nm/2-3 nm vibration and rotation bands) (O and N₂⁺)
- 4) Write up the equations for excitation and ionization.
- 5) Describe the energy levels of atomic oxygen and the wave lengths of photons emitted.
- 6) Height distribution of aurora (day/night). Why don't we see 630.0 nm below 150 km.
- 7) Describe Proton aurora. Why diffuse?
- 8) Why is 630.0 nm more diffuse than 557.7 nm.
- 9) Definition of Rayleigh
- 10) Describe the substorm auroral cycle

From Kievelson&Russell:

Exercise 14.1

Exercise 14.2

Exercise 14.8