Thermal equilibrium

- ◆ **Heating by radiation field in photo case**

- ◆ **In coronal case external process sets temperature**

- ◆ **Cooling is anything that converts kinetic energy into light that escapes**

Two types of lines

- **Recombination AGN3 sec 4.2**
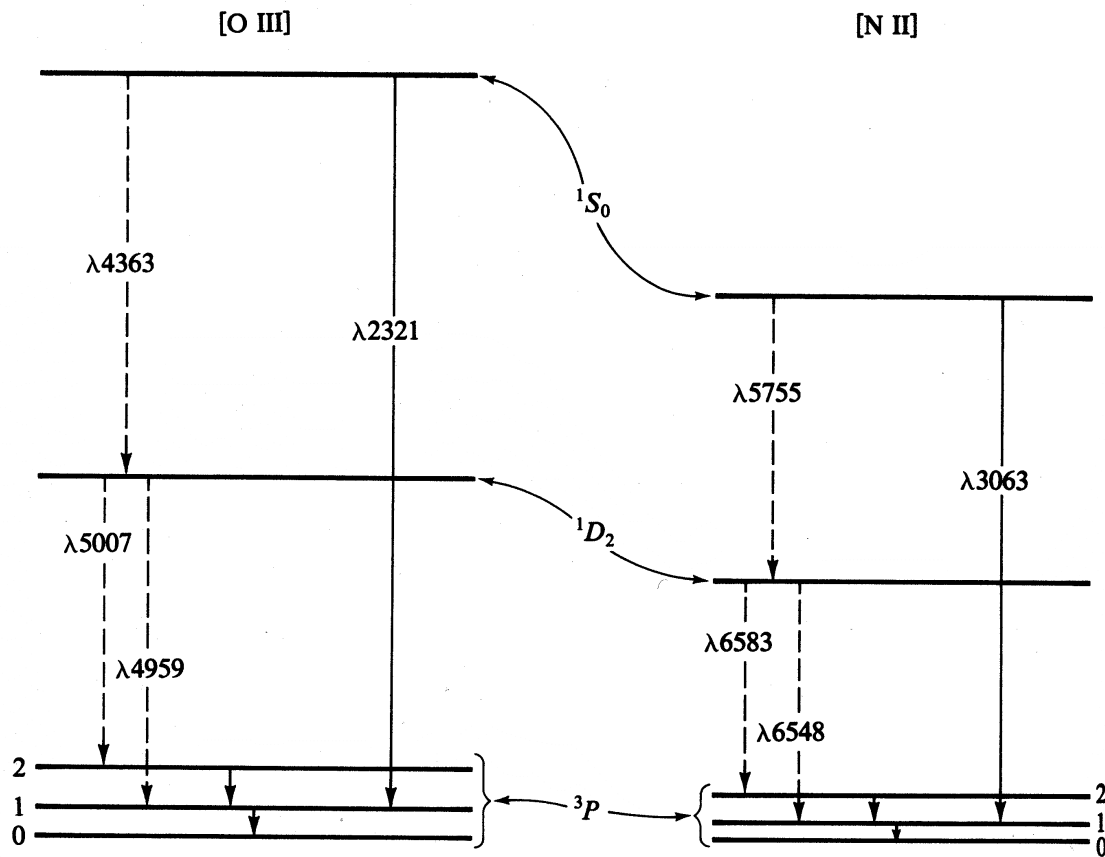 - $q \sim 1e\text{-}13$ cm^3 s^{-1}
  - Mainly H, He

- **Collisionally excited AGN3 3.5**
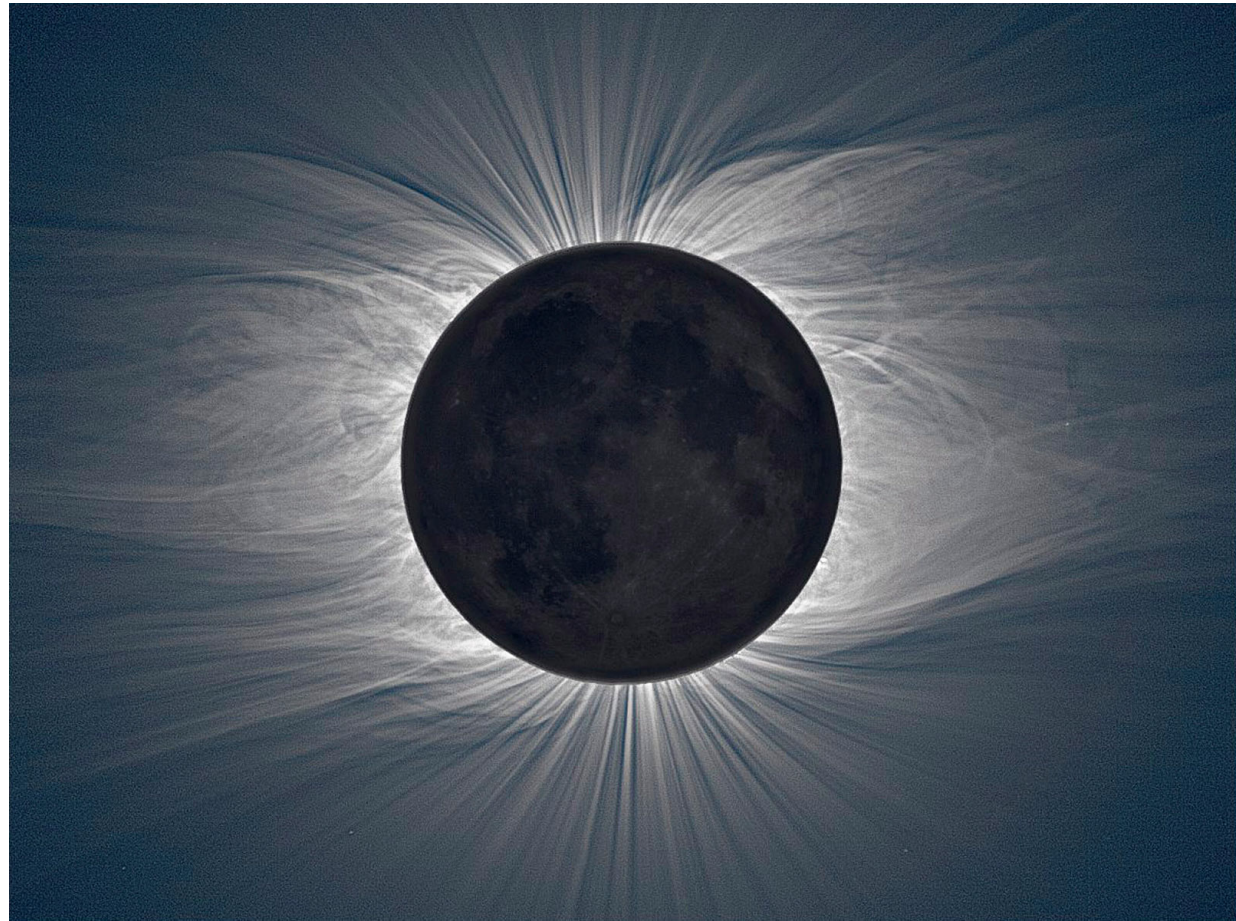 - $q \sim 1e\text{-}9$ cm^3 s^{-1}
  - Heavy element

[O III]

- ◆ **AGN3 Fig 3.1**

Coronal equilibrium

◆ **Mechanical energy sets kinetic temperature**

◆ **"Coronal" command in Cloudy**

◆ **Try several T, plot SAVE CONTINUUM output**

Various temperatures

Grid command – cooling function

- **Grid command Hazy 1 Chapter 18**
  - Carefully study temperature log rules, Sec 18.5
- **Coronal equilibrium command**
- **Save cooling output**
- **Plot cooling vs temperature**

Dalgarno&McCray 1972 ARAA 10, 375

Ferland+09 MNRAS, 392, 1475

Dalgarno&McCray ARAA 10, 375

Ferland+09 MNRAS, 392, 1475

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Ferland+09 MNRAS, 392, 1475