

Lecture Notes 9/23

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Types of Spectra

1. Emission
2. Continious
3. Absorption

The Doppler Shift

• Observer sees the wavelengths emitted or absorbed by a moving source shifted.

- * If source and observer move apart, wavelengths increase (shifted to red - red shift)
- * If source and observer approach, wavelengths decrease (shifted to blue - blue shift)

Earth's atmosphere absorbs some wavelengths

• Especially in non-visible wavelengths.

Various Types of Spectra

Spectrocity = analyze radiation given off by an object (gamma ray; infra-red; etc.)

Why useful? — all objects emit radiation; look @ object without having to go there.

1. Emission line spectra is associated with low density gases

2. Continous (not too important / low density) solids, liquids, high density gases

3. Absorption cool gas between

Emission Line Spectrum

all visible light \rightarrow electron making a transition in the shell - emits a photon

- caused by an electronic transition that can be seen
- has bright discrete wavelengths.

Absorption

- have a cloud (absorbs yellow light)
- star producing white light
 - star - through cloud
 - cloud absorbs yellow light - scattered in all directions
 - lowered intensity of yellow light - holes
 - cloud re-radiates energy
 - lessening of intensity

Emission vs. Absorption

Absorption

Something in between myself and what I am looking at

Emission

Nothing between (point a spectrometer at it.)

Infrared waves (radiation) (clouds absorb infrared)

winter = cold days = clear days
 time = warmer days = cloudy

absorbed by atmosphere

- Ultraviolet (UV) radiation - partial
- X-rays - almost ALL
- Gamma Rays - almost all