Notes: Types of Telescopes

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① 3 Types of Spectra

Spectra – using a spectroscope, light from a star can be split into a rainbow of colours

– each element has its own spectrum so we can look at a star's spectrum and see what elements are there by the lines → composition of star

Types

Bright line spectrum (emission)
- black background with bright lines of colour showing the elements

Continuous spectrum
- rainbow, with all colours joined

Dark line spectrum (absorption)
- continuous background with dark lines where the bright ones would be
- most useful for finding composition of a star's atmosphere.

② Electromagnetic spectrum

– a scale showing the 7 different energies of "light"

- radio
- microwaves
- infrared
- optical / visible

increasing energies

- optical / visible
- UV
- x-ray
- gamma rays

energies ↓

- each energy type has its own type of detector / telescope

Walk around activity:
for each em wave type, jot down 3 interesting/informative points

radio
- radio astronomy, SETI
- radio waves are safe
- emitted by sun + all stars
- use antenna to collect
- waves pass through clouds, etc

microwave
- cell phones, maybe harmful to brain
- detects the cosmic background radiation, temp of universe 2.73°K = -270°C
- some can pass through atmosphere

infrared
- heat
- emitted by sun/stars
- thru dust, but best telescopes on mt or in space

optical
- refractors (lens), reflectors (mirrors) ← telescopes
- we see with our eyes
- best to be outside atmosphere

ultraviolet
- tan/burn/give skin cancer to us
- from sun/stars
- glowing minerals

x-ray
- space-based telescopes, atm. protects us
- high energy
- sun/stars

gamma ray
- highest energy
- orbiting telescope, atm. protects us
- solar flares, supernova