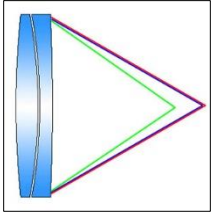


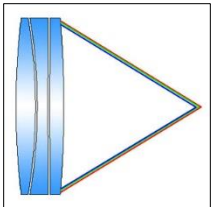
Telescope Fair 2022 Vocabulary

Achromat[ic Doublet]: Refractor with doublet (2-lens) objective that forces red & blue light (but not yellow and green) to come to the same focus point



Achromatic Doublet

Altitude: How high up an object is from the horizon. Basically amounts to moving up and down.



Apochromatic Triplet

Apochromat[ic Triplet]: Refractor with triplet (3-lens) objective that forces red, blue, & green/yellow light to come to the same focus point.

Azimuth: How far east an object is starting from north. Basically amounts to spinning to the right or left.

Aperture: Diameter at the end of the telescope (or single ocular of a binocular) that faces the sky.

Barlow: Lens that doubles any eyepiece collection by increasing the magnification of any eyepiece—but it also shrinks the field of view and dims the image.

Chromatic Aberration: Different colors of light coming to a focus at different points along the same axis.

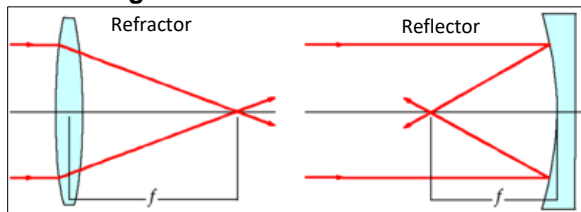
Collimation: Adjusting primary and secondary mirrors to face each other correctly.

Equatorial Coordinates: Right Ascension and Declination (analogous to Earth's Longitude & Latitude, respectively).

Eyepiece (“EP”): The tube of lenses that magnifies the image that the telescope collects; you look through this with your eye to see and magnify the telescope's image.

Finders: Devices that help you aim your scope.

Focal Length:



For a Refractor: The distance from a lens surface to where a light cone coming through it comes to a focused point.

For a Reflector: The distance from a mirror to where a light cone reflecting off of it comes to a focused point.

Magnification: The number of times an object appears to be enlarged in the eyepiece's view. **Magnification = “Power”** and is calculated by a simple division formula:

$$\frac{\text{Focal length of telescope (in mm)}}{\text{Focal length of eyepiece (in mm)}}$$

Example: A telescope with a 1200 mm focal length used with a 10 mm focal length eyepiece gives a magnification of:

$$\frac{1200}{10} = 120$$

Magnification, Empty: Magnifying an image beyond a telescope's Maximum Magnification.

Magnification, Maximum: For a good telescope, roughly 50 times per inch of aperture = the Maximum Magnification that can be used on the telescope's image. To attempt magnification beyond this value is to just magnify the blur. Example: A 3-inch diameter telescope would allow a maximum magnification of $(3 \times 50) = 150$ times.

Objective: The lens or surface closest to the object observed.

Parabol[-a, -ic, -oid]: See Terms in Pictures, below.

Spherical Aberration: Same as chromatic aberration, only from reflection, not refraction.

Mounts:

Alt-Az (Altitude-Azimuth): A simple telescope mount type that points a telescope directly up and down, and left and right.

Dobsonian: A sturdy and inexpensive Alt-Az mount for reflector telescopes.

Equatorial: A more advanced telescope mount type that involves setting one of the mount's rotation axes parallel to Earth's rotation axis. These mounts do allow motorized object tracking, but are more involved to set-up and take practice learning how to use.

Fork: A mount type typically used for Catadioptric type telescopes that can be set up as either Alt-Az or Equatorial.

Telescope Types:

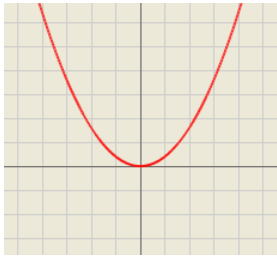
Catadioptric: A telescope design that uses both a lens and mirrors to collect light for an image. The most popular design of this category is the Schmidt-Cassegrain (SCT). Other catadioptric designs include the Maksutov-Cassegrain and the Ritchey-Chrétien. **Bird-Jones** design telescopes are also really “Cat” scopes, no matter how they're advertised.

Reflector: A telescope using only mirrors to collect light. (Mirrors show you your reflection; they reflect.) A **REAL Newtonian Reflector** uses a parabolic primary mirror with a flat secondary mirror. A **“Dobsonian” (or “Dob”)** **Telescope** is a Newtonian Reflector on a Dobsonian Mount.

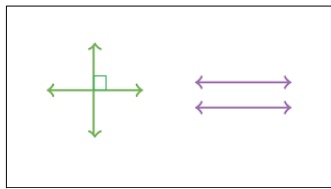
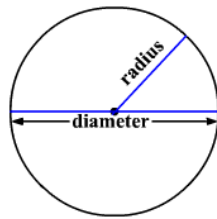
Refractor: A telescope that uses only lenses to collect light. (“Refract” means bending light.)

Acronyms

Terms in Pictures:

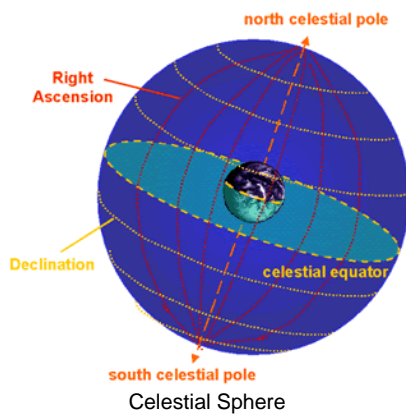


Parabola

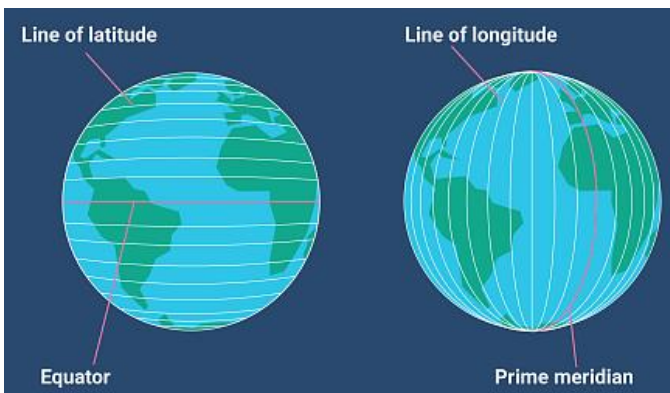


Perpendicular

Parallel



Celestial Sphere



APO: Apochromatic Refractor Telescope

Dec: Declination (Earth’s Latitude projected on the sky); is measured in degrees above or below Celestial Equator

EP: Eyepiece

MAK: Maksutov Cassegrain Telescope

OTA: Optical Tube Assembly

RA: Right Ascension (Earth’s Longitude projected on the sky); is measured in hours, minutes, & seconds eastward around the Celestial Equator from the Vernal Equinox point.

SCT: Schmidt-Cassegrain Telescope

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