

Learning the Night Sky

Equipment 101

Terms

- Aperture – how wide
- Magnification – how much bigger
 - Field of View
 - Apparent
 - Actual
- Mounting
 - Alt-Az
 - German Equatorial
 - Dobsonian

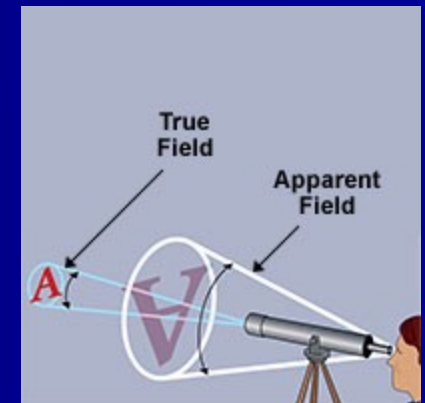
Terms

- Aperture — how wide is the main optical element
 - *Bigger* gathers more light
 - *Smaller* is easier and cheaper to make



Terms

- Magnification – how much bigger does the object look
 - NOT the most important
 - “450x” is usually an exaggeration
 - Apparent vs. True Field of View: $TF = AF \times mag$
 - Both depend on the eyepiece!



Terms

- **Mounting** – The “telescope stand”
 - **Alt-Az** is simplest and easiest to use
 - Up and down, left and right
 - Tripod



Terms

- **Mounting** – The “telescope stand”
 - **German Equatorial** is commonly seen
 - Polar alignment
 - Tracks the sky better
 - From “cheap-o” to \$\$\$
 - Can be motorized
 - Tripod



Terms

- **Mounting** – The “telescope stand”
 - **Dobsonian** – John Dobson
 - A type of Alt-Az
 - Easy to point
 - best “bang for the buck”



Binoculars

- Which Way is Up? Normal
- Magnification x Aperture
 - 7 x 50, 10 x 50, etc.
- Hand-Held vs. Mounting
 - Weight
 - Magnification
- Porro vs. “roof prism”
- Coatings



Telescopes

- Which Way is Up?
 - Normal (binoculars)
 - Inverted (e.g., Reflector)
 - Mirror Image (e.g., Refractor with Diagonal)



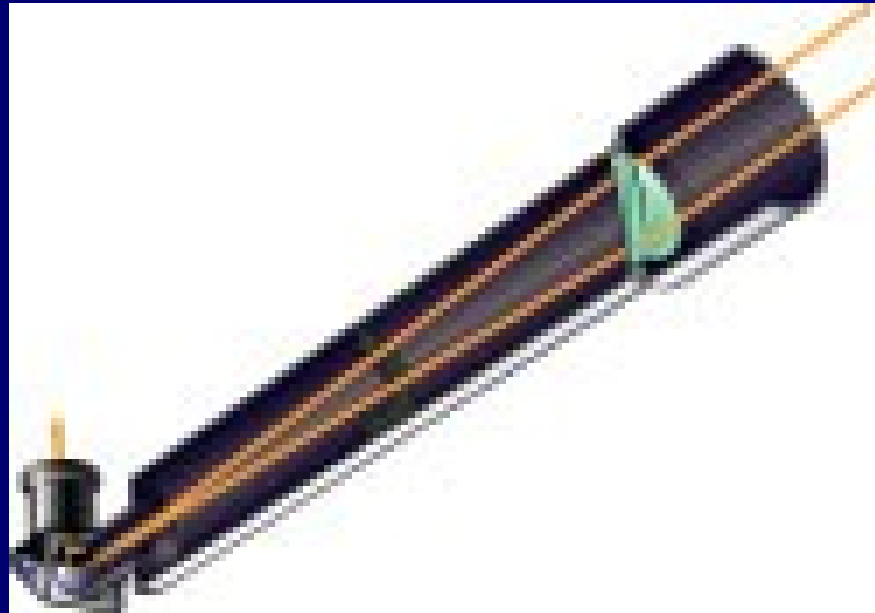
Telescopes

- Refractor
 - GE or Alt/Az Mount
 - May not track
 - Least Aperture/\$
 - Relatively small and portable
 - Cheap to \$\$\$\$



Telescopes

- Refractor light path



Telescopes

- Dobson Newtonian
 - “Reflector”
 - Alt-Az Mount
 - Easy to point
 - Most aperture/\$
 - Does not track
 - Excellent first scope
 - Requires collimation



Telescopes

- Reflector optical path



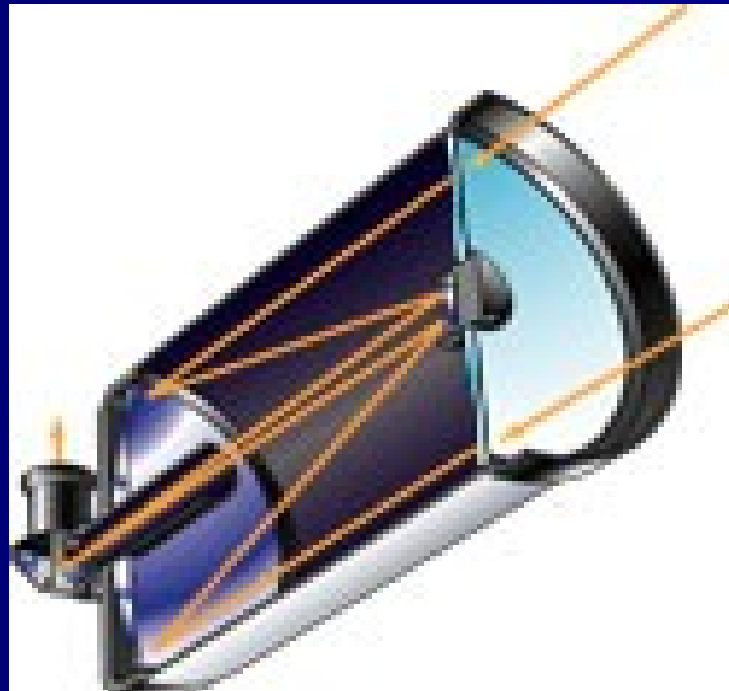
Telescopes

- Cassegrain Types
 - Different mounts
 - Often “go to” now
 - Short, fits in car trunk, etc.
 - Can be heavy/bulky



Telescopes

- Cassegrain Types – optical path



Accessories

■ Eyepieces

- Focal length (3-55mm)
- Diameter (1.25 vs. 2")
- Many different kinds
- \$30 ... \$600+
- Field of View
- Optical distortions



Accessories

- Eyepieces
 - Example: Plossl
 - 6 to 40 mm F.L.
 - 52 degree AFOV
 - Small and lightweight
 - Good but inexpensive



Accessories

- Eyepieces
 - Example: Nagler
 - 2.5 to 31 mm F.L.
 - 82 degree AFOV
 - Large and heavy
 - “Top shelf”



Accessories

- Finders

Two main types:

- "mini scopes"
- "zero power"



Accessories

- Finders
 - Zero Power



Accessories

- Finders
 - “mini scopes”
 - Upside down vs...



Accessories

- Misc.
 - Red Flashlight
 - Dew Heater
 - Len Cleaning
 - Portable table
 - Collimator
 - etc.



Online Information

- This class
 - <http://mhuss.com/Astro/Course/>
- Astronomy/Space
 - <http://www.livescience.com/space/>
 - <http://www.space.com>
- What's Up
 - <http://www.heavens-above.com/>
 - <http://www.aurorasentry.net/>
 - <http://www.nineplanets.org/>

More Information

- Free Star Charts
 - <http://www.skymaps.com/>
- Astronomy Magazines
 - <http://www.astronomy.com/>
 - <http://www.skyandtelescope.com/>
- Local Clubs
 - <http://dvaa.org>
 - <http://www.ccas.us/>
 - <http://www.chesmontastro.org/>

A Big Reflector

