



Figure 7.1: Relationship of aperture size versus magnitude visibility

Carefully aim the telescope at the target and center it in the field of view. While you are doing this, the iris diaphragm should be at its maximum opening (notice that a scale on the telescope tube tells you the opening or aperture in millimeters). Do not force the diaphragm; turn it gently! You should see a vertical row of six “stars” of diminishing brightness, like in Figure 7.2. Focus the telescope by slowly turning the knob on the eyepiece tube until the image is at its sharpest; it is quite possible that different observers will need to adjust the focus for their own eye. If you wear glasses, experiment to determine whether the image is better with or without the glasses.

Your instructor will have adjusted the illumination in the projector so that the faintest of the six stars is at the limit of normal vision. You may have to allow a little time for your eyes to become dark-adapted before you can see it. This star then corresponds to a 6<sup>th</sup> magnitude star in the night sky. The star adjacent to it is 5<sup>th</sup> magnitude, the next is 4<sup>th</sup>, and so on to the brightest, which is of 1<sup>st</sup> magnitude. The group of six stars, in other words, represents the range of naked-eye stars as first defined by Hipparchus over 2000 years ago. If you study the group and retain some impression of it, it will help you to estimate the brightnesses of various stars in the real night-time sky.



Figure 7.2: Diagram of the 6 pinholes on the slide you will observe