

Introduction to Astronomy and Astrophysics I/II

Discussion Section/Exercises Monday, Sep. 26, 2005

- 1) If you observe the Andromeda galaxy (M31) at a point 0.2 degrees from its center under normal seeing conditions (FWHM $\sim 1''$), how many bright giant stars (near the tip of the giant branch) contribute to V-band light within one resolution element?

Assume $\frac{1}{4}$ of the total light of an “old” (>5 gyr) population comes from giants near the tip of the giant branch.

Note: you need to get the surface brightness profile and the distance to M31 from the web (e.g. NED or ADS).

- 2) The center of Andromeda’s companion, M32 is one of the highest surface brightness galaxies known. The stellar population in its center has a similar color as the sun. What fraction of the area on the sky towards M32, say $0.1''$ from the center, is actually covered by the ‘stellar disks’ of the stars, and how much is ‘dark sky’?

Note: you need to track down M32’s surface brightness, the sun’s diameter and apparent magnitude