Studying the Outer Regions of Radial Surface Brightness Profiles with the McDonald Observatory Prime Focus Camera
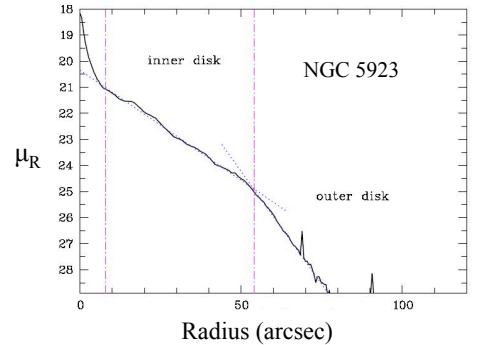
Joy Chavez

University of Houston, University of Texas McDonald Observatory REU 2004
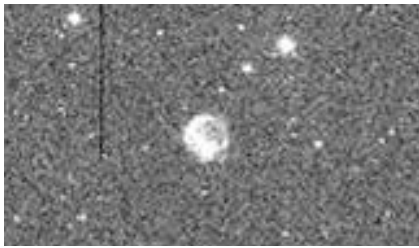
Background

- Surface Brightness profiles: quantitative measure of mass distribution
- Breaks in exponential profile:
  - Question of existence in galaxy
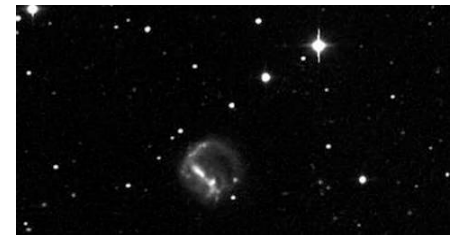 - Possible measure of the edge of the galaxy

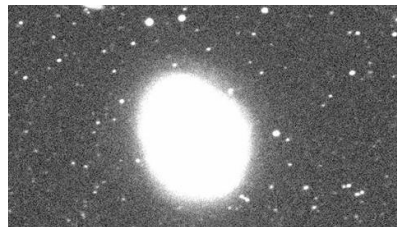Evidence for breaks (Pohlen et al. 2004)

Before data reduction (NGC 3664)

Methods

- Flattened
- Sky Illumination correction
- Shifted and Registered

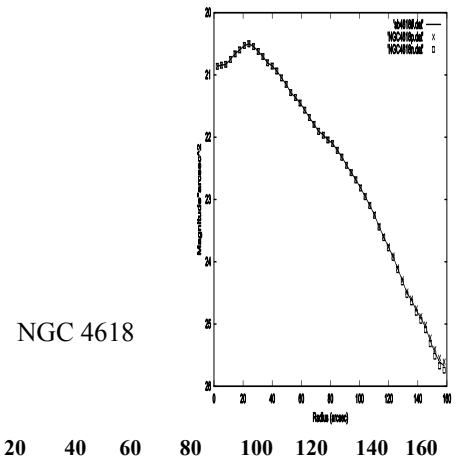

After data reduction

NGC 4618: high contrast

Analysis

- Compare dark regions of final frame
- Find maximum variation
- Scale this to galaxy size
- Determines limiting magnitude
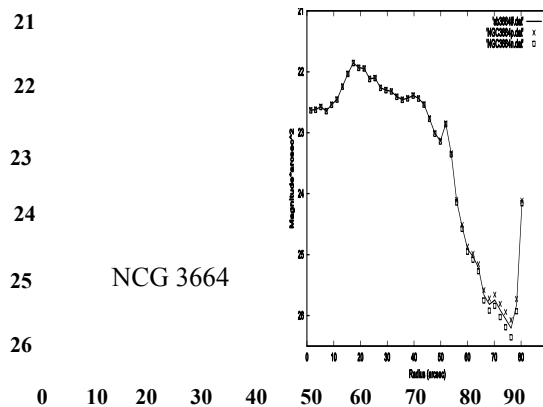
Conclusions

1. Sky uncertainties manageable
2. The 0.8m will be able to detect these breaks. Further work will continue to find them

NGC 4618

Dark regions in the final frame: Average flux in the square. Then find the maximum variation across the image.

NCG 3664

X-Axis: Radius (arcsec)
Y-Axis: Magnitude per square arcsec
X – Upper error bound
O– Lower error bound