

M31 Reduction

Name: _____

Date: _____

Calibration Constant

Please show one example of your calculation of the constant in the equation: $m = -2.5 \log_{10}(S/T) + \text{constant}$

Filter: _____

Apparent magnitude of the calibration star in this filter (m): _____

Exposure time (T): _____ (seconds)

Photon count with sky background subtracted (S): _____

Constant: _____

Your derived values of constants for both filters:

Constant for B filter: _____

Constant for V filter: _____

M31 Magnitude

Please show one example of your calculation of the M31 magnitude, using the equation: $m = -2.5 \log_{10}(S/T) + \text{constant}$

Filter: _____

Calibration constant for this filter: _____

Exposure time (T): _____ (seconds)

Photon count with sky background subtracted (S): _____

Derived apparent magnitude: _____

Please fill in all your other measurements/calculation results in the table on the next page

Filter	Exposure Time (seconds)	Image Number	Aperture Radius (pixels)	Photon Count	Magnitude	Average Magnitude
B		1	16			
		2				
B		1	32			
		2				
B		1	48			
		2				
B		1	96			
		2				
V		1	16			
		2				
V		1	32			
		2				
V		1	48			
		2				
V		1	96			
		2				

M57 Reduction

Calibration Constant

Please show one example of your calculation of the constant in the equation: $m = -2.5 \log_{10}(S/T) + \text{constant}$

Filter: _____

Apparent magnitude of the calibration star in this filter (m): _____

Exposure time (T): _____ (seconds)

Photon count with sky background subtracted (S): _____

Constant: _____

Your derived values of constants for both filters:

Constant for B filter: _____

Constant for V filter: _____

M57 Magnitude

Please fill in your raw measurements of photon counts in the table below:

Filter	Exposure Time (seconds)	Image Number	Aperture Radius (pixels)	Photon Count
B		1		
		2		
B		1		
		2		
B		1		
		2		
V		1		
		2		
V		1		
		2		
V		1		
		2		

For M57, we would like to measure the magnitude of both the central white dwarf (WD) and the surrounding ring. The central star is measured by the photon count (already corrected for the sky background) within the smallest aperture. The surrounding ring is measured by the difference of the photon counts within the largest aperture and that within the medium-size aperture.

With this in mind, please show one example of your calculation of the M57 ring magnitude, using the equation:

$$m = -2.5 \log_{10}(S/T) + \text{constant}$$

Filter: _____

Calibration constant for this filter: _____

Exposure time (T): _____ (seconds)

Photon count within the largest aperture: _____

Photon count within the medium aperture: _____

Photon count of the ring region (S): _____

Derived apparent magnitude for the ring region: _____

Please fill in all your other measurements/calculation results in the table below

Filter	Exposure Time (seconds)	Image Number	Measured Region	Photon Count	Magnitude	Average Magnitude
B		1	Central			
		2	WD			
B		1	Outer ring			
		2				
V		1	Central			
		2	WD			
V		1	Outer ring			
		2				