

Observing at the Maryland Space Grant Observatory



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M42, 10 min each in OIII, H α and SII

Telescopes

Morris W. Offit Telescope:

- 20 inch diameter Ritchey-Chretien
- f/8 focal ratio
- 13.7 x 10.4 arcmin FOV

Meade 127ED/APO ("Finderscope"):

- 5 inch diameter refractor
- f/9 focal ratio
- 53.5 x 40.4 arcmin FOV



Camera

ZWO ASI1600MM Pro
Monochrome CMOS

4656 x 3520 pixels

3.8 μm pixels

Can reach 40-45 C below
ambient temperature

Please see guide



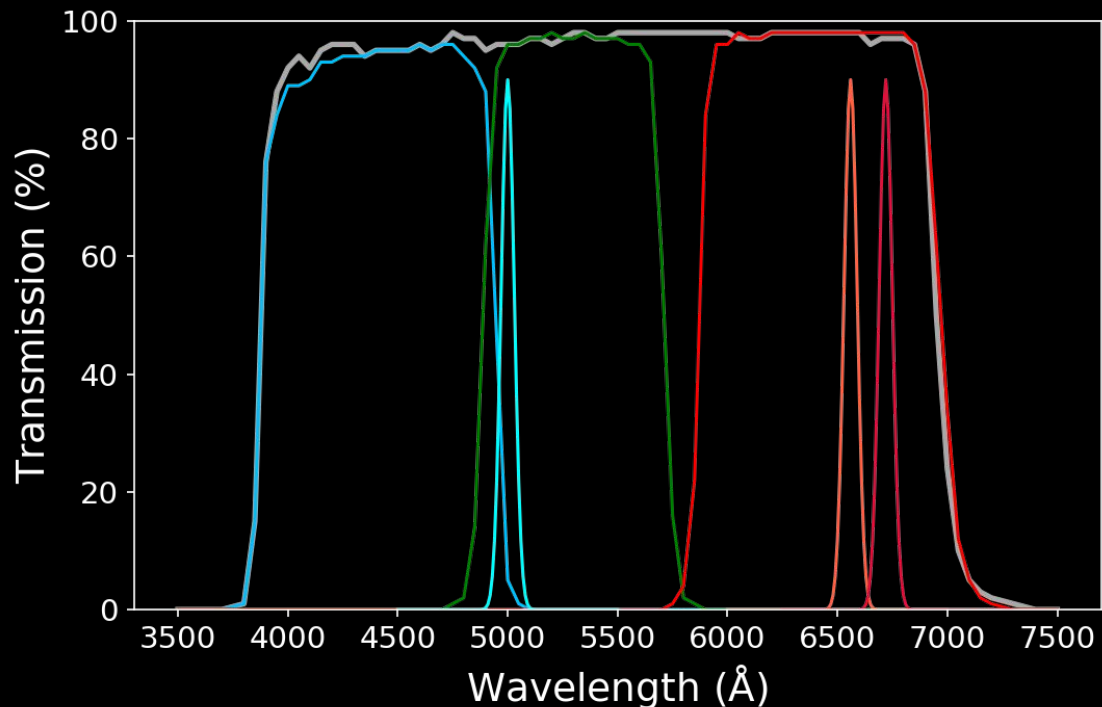
Filters

7 filters available in EFW
mini filter wheel:

Luminance band

R, G, B bands

70 Å FWHM narrowbands
in [OIII], H α and [SII]



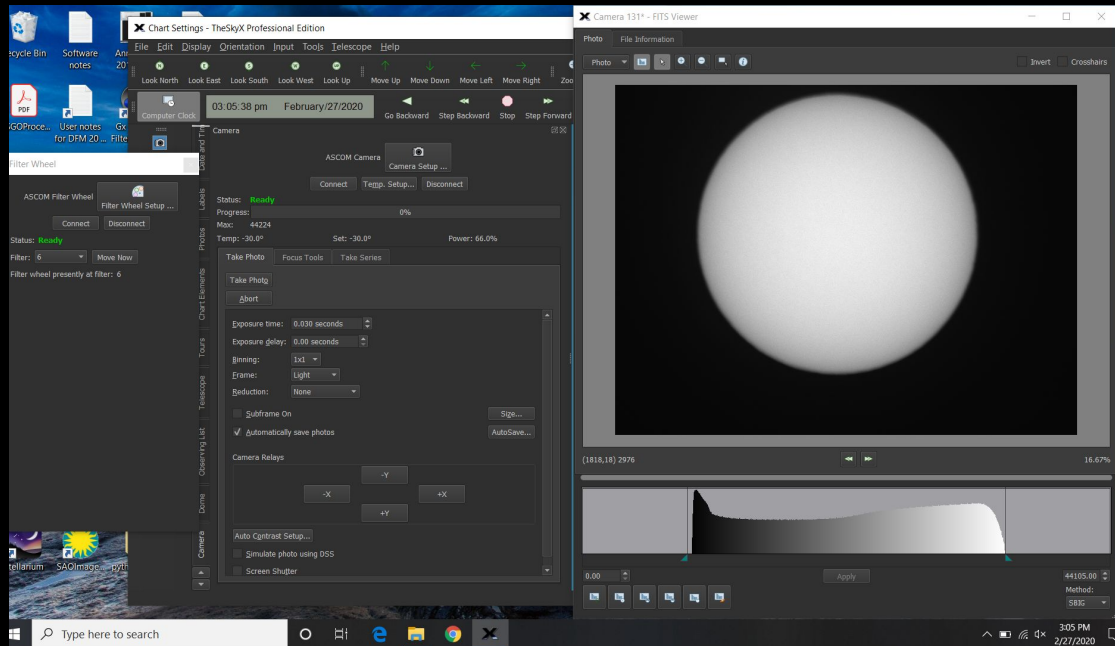
Camera software

TheSkyX + camera add-on

Can take images in series

Images saved in FITS format

Training will be built into
first hour of observing



“Good” Observing Conditions

Seeing ~3 arcsec

Tracking stable to ≤ 0.5 PSF over 8-10 min

Limiting magnitude (S/N ~ 10), imaging (point sources) ~ 17 mag (V)

Limiting magnitude (S/N ~ 10), spectroscopy (point sources) ~ 13 mag (V)

Conditions above apply to airmass < 1.5

Observing modes - imaging

Messier 66 ($V = 8.9$)

In 4x8 min in R can reach
 ~ 21 mag / arcsec² at S/N ~ 10



Observing modes - astrophotography

Messier 66 ($V = 8.9$)

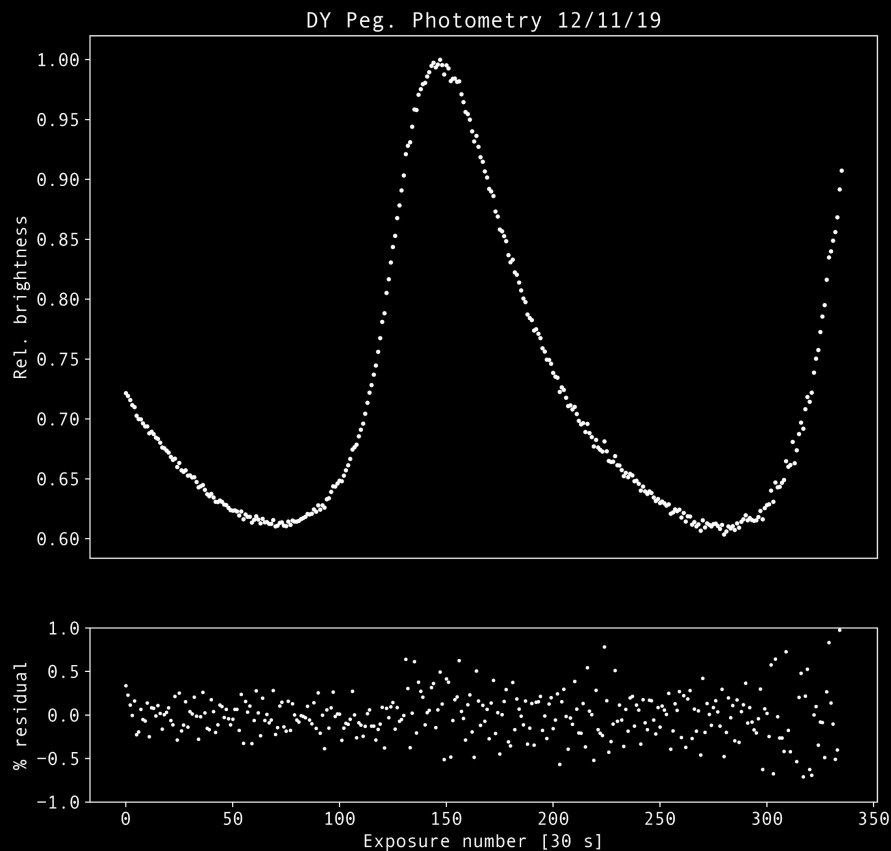
In 4x8 min each in B, G, and R -->



Observing modes - photometry

DY Peg ($V = 10.3$)

At 30 sec cadence able to
achieve 0.2% relative precision



Observing modes - spectroscopy

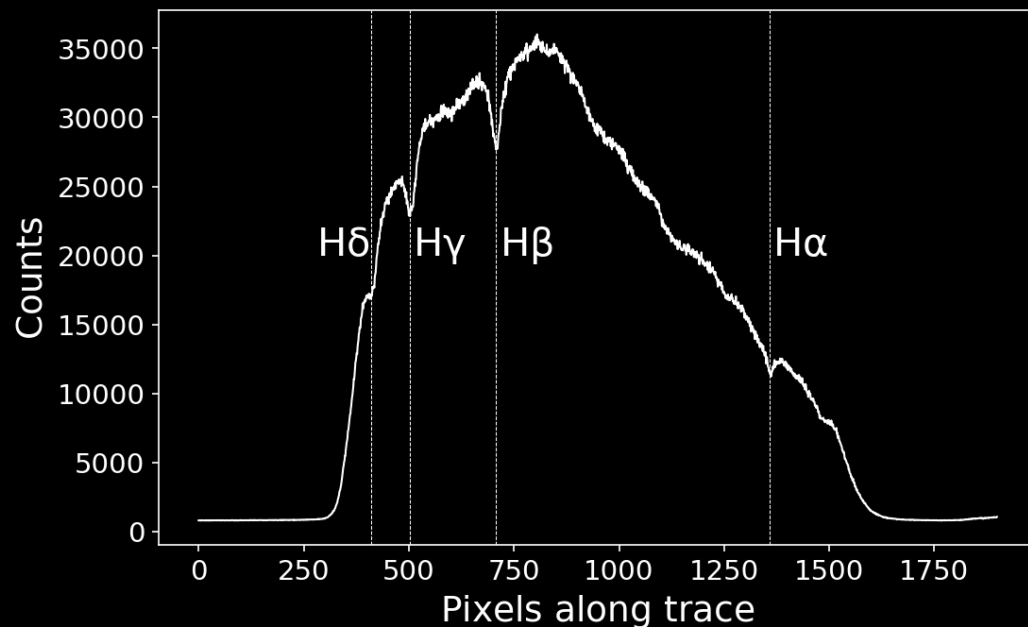


Using Star Analyzer 200
lines/mm grating

Dispersion $\sim 2.5 \text{ \AA} / \text{pixel}$

$R \sim 120$

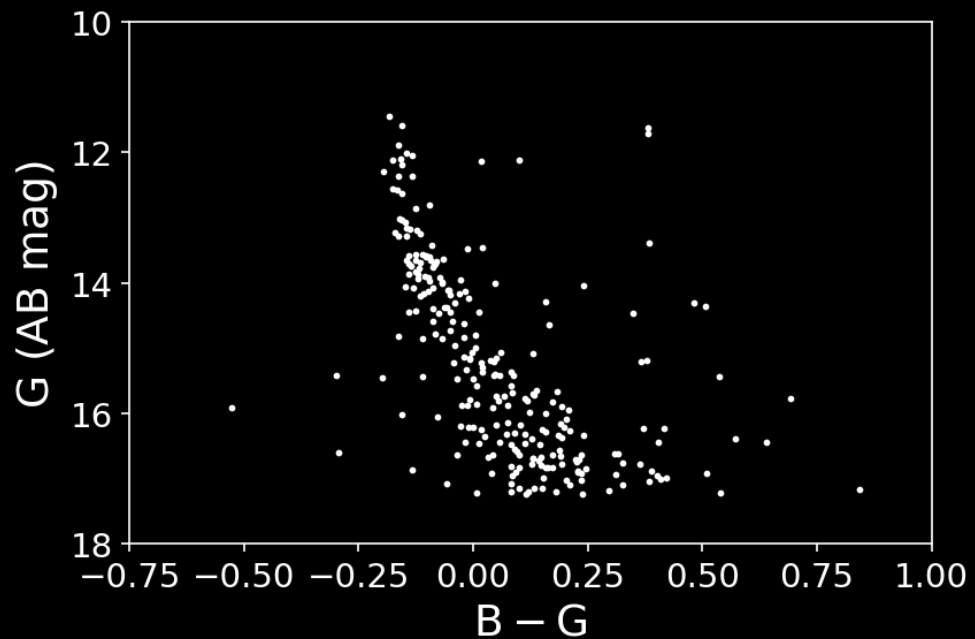
Sirius in 0.1 sec -->



Messier 38 ($V = 7.4$)



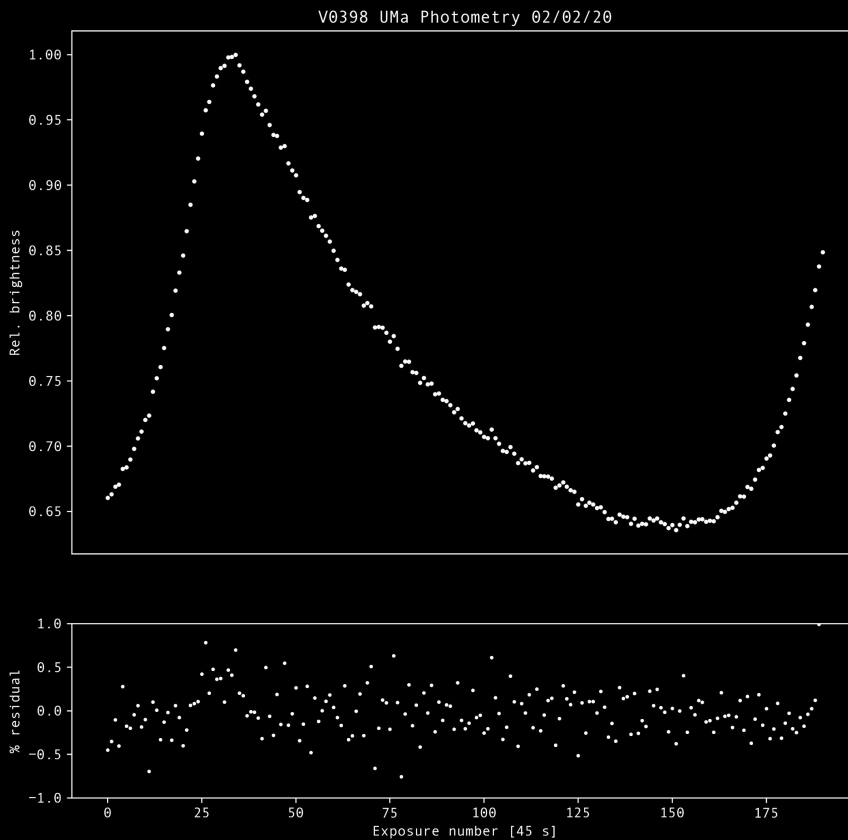
3x3 min each in B, G, R at airmass ~ 1.5



Observing modes - photometry

V0398 UMa ($V = 11.6$)

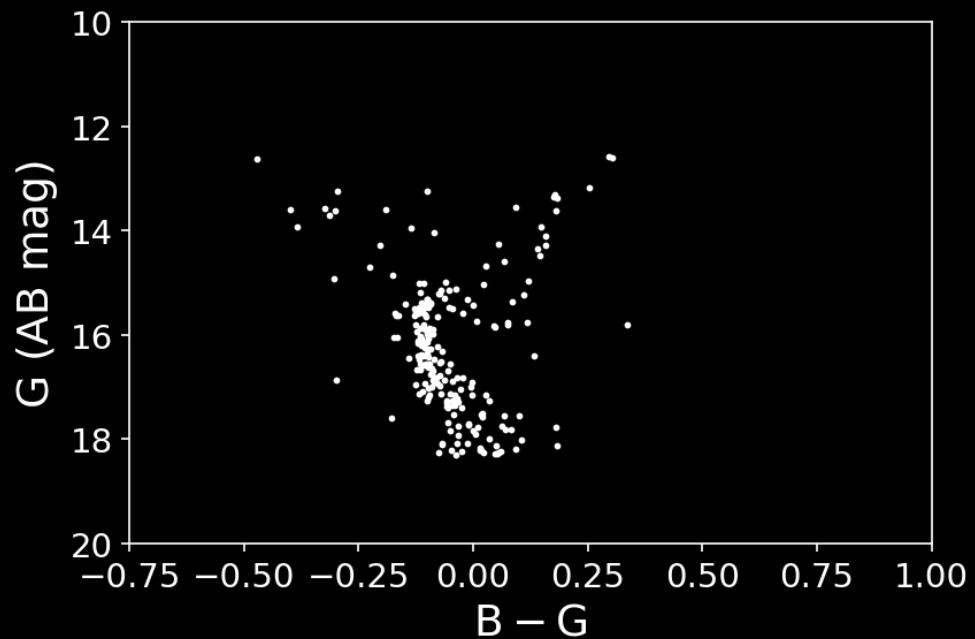
At 45 sec cadence able to
achieve 0.3% relative precision

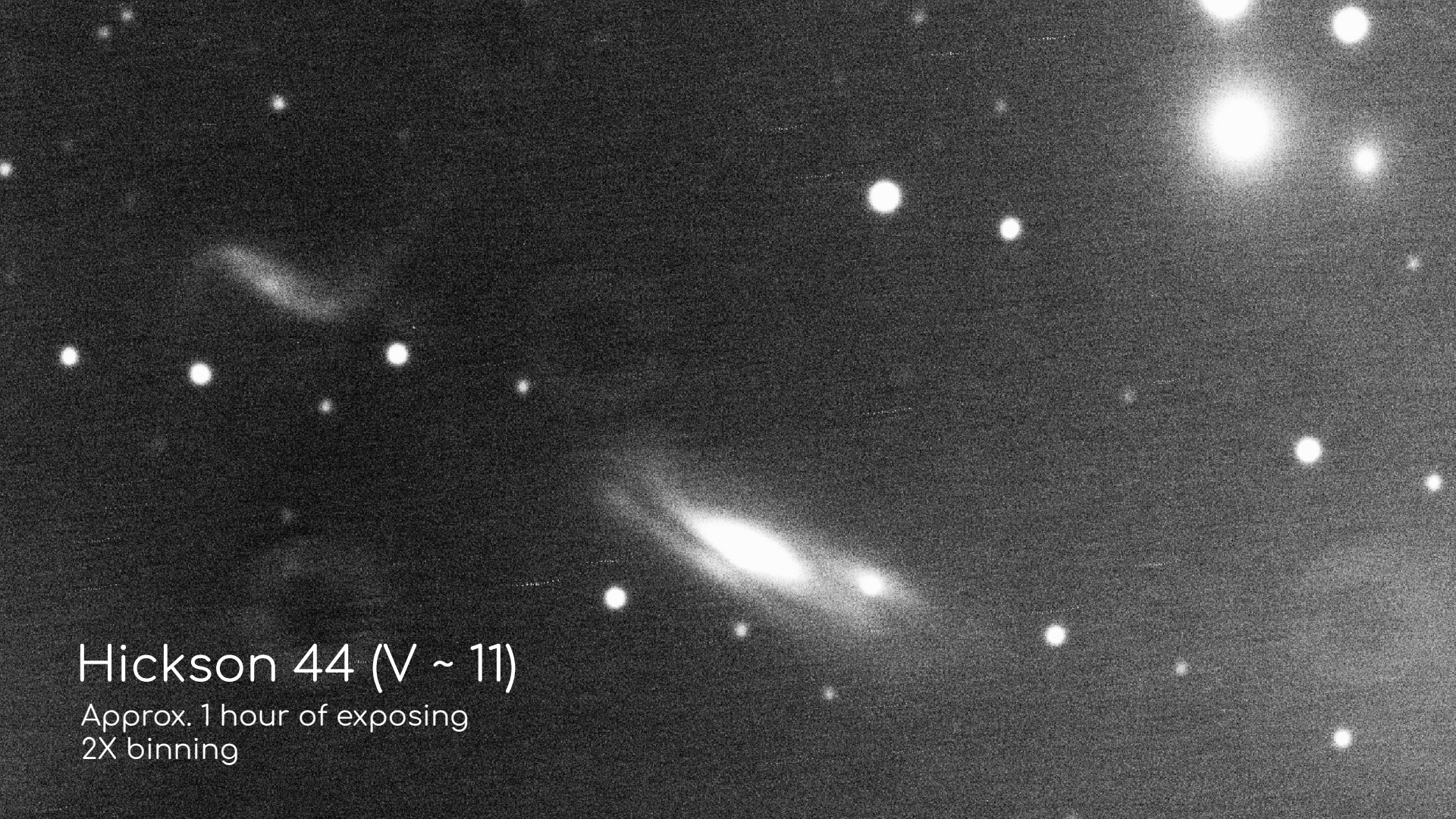




3x4 min each in B, G, R at airmass ~ 1.2

Messier 67 ($V = 6.1$)

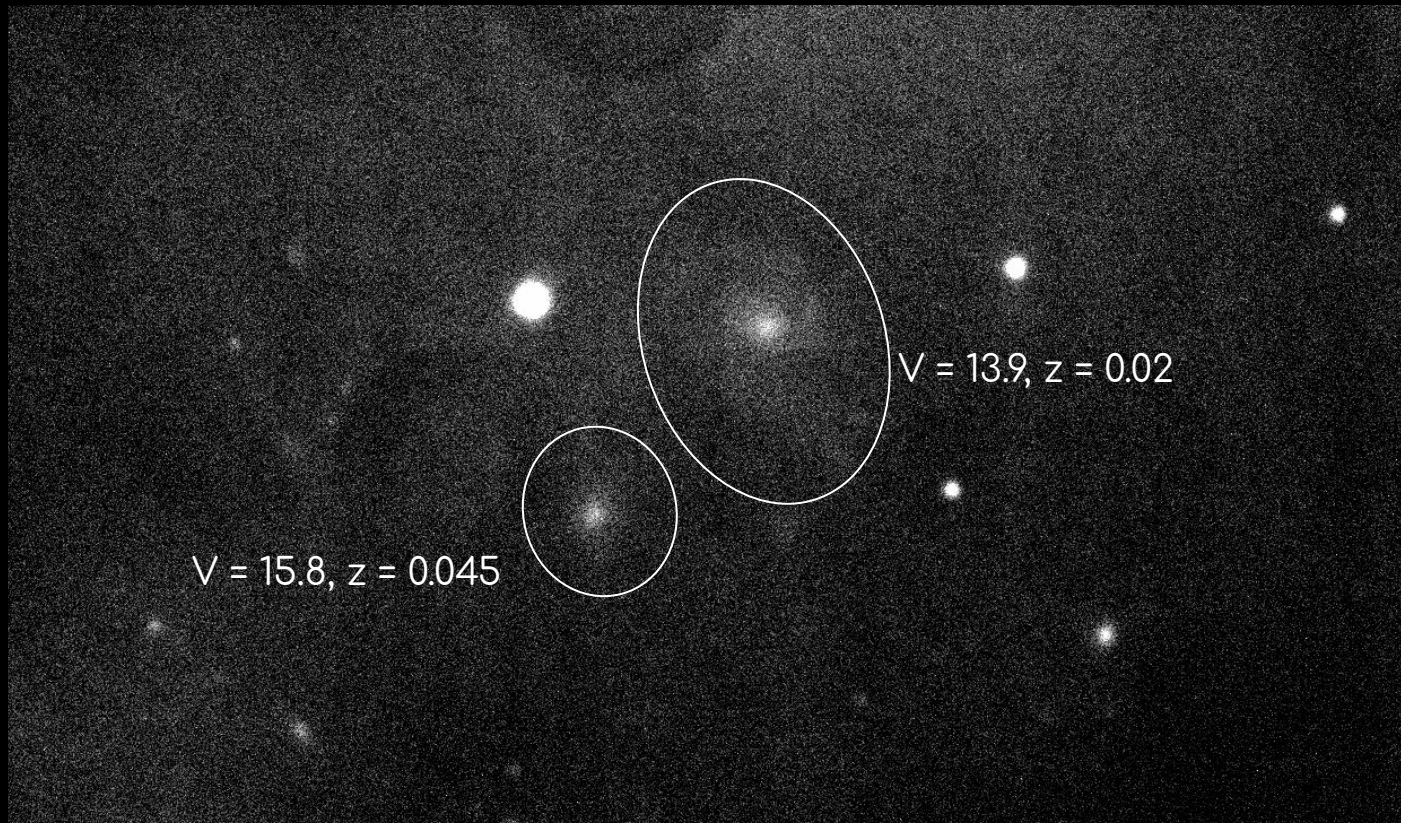




Hickson 44 ($V \sim 11$)

Approx. 1 hour of exposing
2X binning

“High-redshift” galaxies

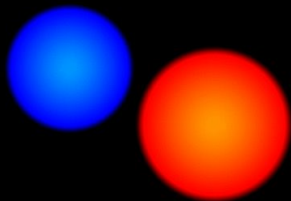


Hickson 73, 15 min in L, with full moon up

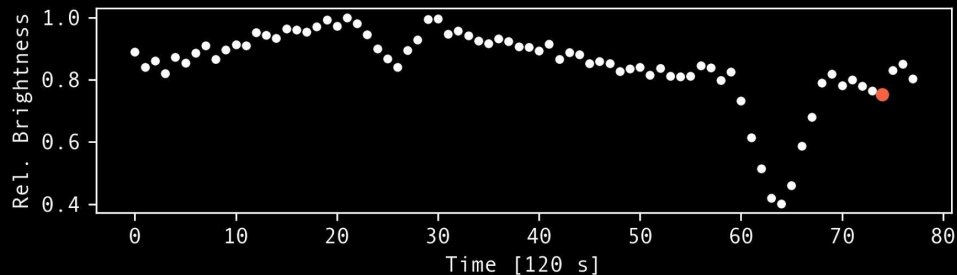
Spectrophotometry of HW Vir ($V = 10.6$)

Relative aperture photometry using
0th order, background-subtracted
spectroscopy using 1st order

120 sec exposures

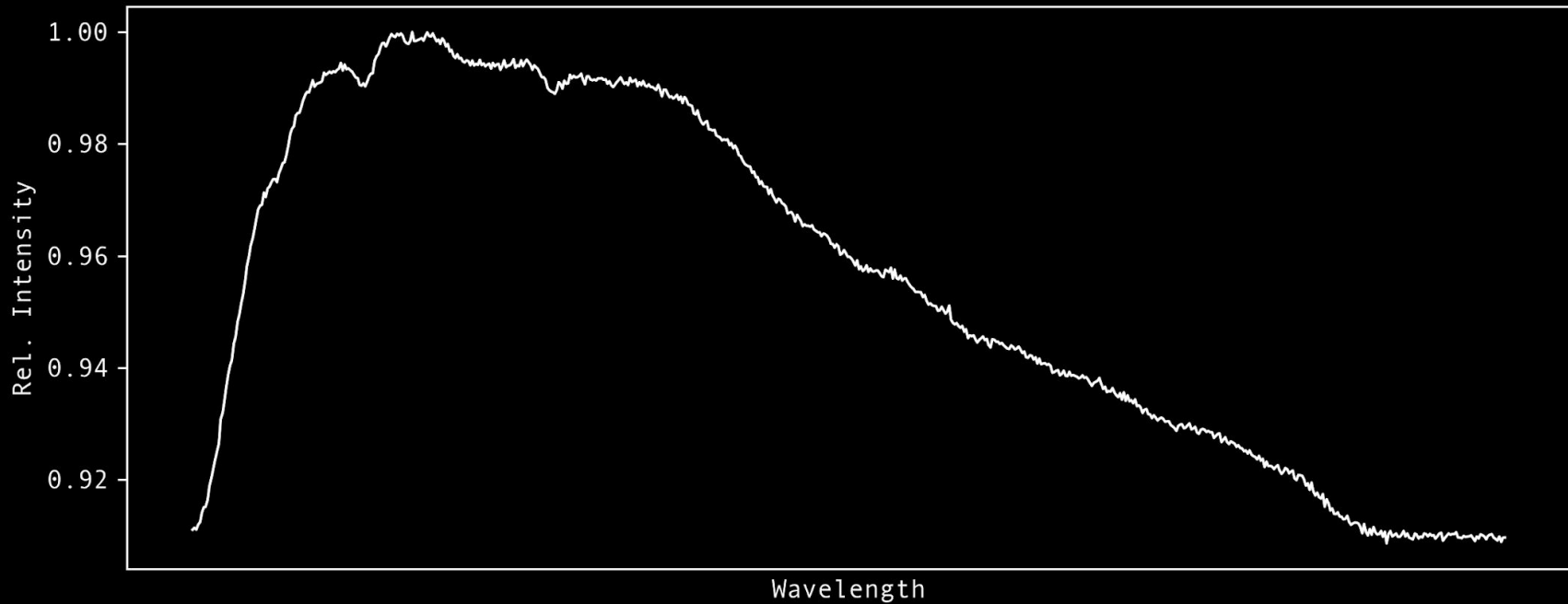


HW Virginis Spectrophotometry (02/22/20)



Spectrum of HW Vir

HW Virginis



HW Vir over 3 hours

