Project proposal

Cephiads/exoplanet transit

Is it up?

Is it bright enough?

Sunset/sunrise

Astronomical Twilight

What is the sidereal time at midnight

March 21/22, sun is at RA 0hours “vernal equinox”, at Sidereal time 0 the sun is directly overhead (on the meridian) – as high as it is going to get that day. 12 hours later that is local solar midnight (the sun is as far down as it is going to be that night). So we will be looking at things near sidereal time 12

Something at RA 15, see it at 0300 in the morning, if something is far enough north we can see it all night long, dec +30 is good, dec 0 is not good, dec 45 have most of the night

Is it bright enough?

* Interference: sky background (air glow, light pollution, moon phase)
* Atmospheric absorption: dust/aerosols
* Aperture
* CCD, Quantum efficiency, filter being used
* Focus – PSF how is the atmosphere effecting the point spread function

6” telescope, 6th magnitude, gives you 106photons/second is for all wavelengths

1.2m=48” equals 64e107 photons/sec

Magnitude = -2.5 log10(f/fo)

So 11th magnitude star gives 6e105 photons/sec

16th magnitude star gives gives 6000 photons/sec – 10 seconds you have 60,000 photons/sec

When the moon is up it costs you 18th mag/sq arc seconds which equates to 24,000 photons/sec

3/ 17, 18, 19/2020

Signal to noise: =200

Pixels are .672 arcseconds

Exposure time calculator = the higher the better, lower magnitude star the better, exposures should be under 5 minutes if possible – 10 is doable but is more work

Use iobserve

Hint in write up: svm

Trained on high and low for 32, after than using svm generated predictions

Numba = just in time,

High = 10

Low = .4

Calculated proportion of ones for high and low, high was 1, low was .002