

Astrophysics 3; Semester 1; Worked Examples

1. There are two quasars located at RA= $15^h 46^m 37.45^s$, Dec= $+17^\circ 06' 25.6''$ and RA= $15^h 46^m 58.13^s$, Dec= $+17^\circ 03' 47.1''$.

What is the angular separation of these two quasars on the sky, in arcseconds?

2. You are observing at the UKIRT telescope in Hawaii (latitude= $+20^\circ$, longitude= -155°) in mid-January. It is midnight.

Roughly what range of right ascensions and declinations of stars are visible to you more than 30 degrees above the horizon?

3. It is decided to try to obtain a deep infrared spectrum of a faint galaxy which has co-ordinates RA = $21^h 32^m 15.34^s$, Dec = $+09^\circ 12' 24.0''$.

During which month in the year would it be best to observe this object to maximise the length of integration which could be obtained during a single night?

It is proposed to centre the galaxy in the spectroscopic slit by offsetting from a nearby bright star which is $40.2''$ east of the galaxy and $40.5''$ south of it. Work out the coordinates (RA and Dec) of this star.