OBSERVING TECHNIQUES

Non-Sidereal Observing, with and without Guiding

Sometimes we want to observe something which moves at a non-sidereal rate, e.g. a solar system object such as a comet or an asteroid. In this case, the TCS needs to be told to track at a different rate from sidereal. The differential rate in RA, dRA (in seconds/second) and Dec, dDec (in arcseconds/second) should have been calculated by the observer for all times during the night when observations might be wanted, as well as the RA and Dec at these times. See "DIFF_RATES in the TCS user guide".

In the TCS:

gocat asteroid (with RA and Dec at the time observations start)
diff dRA dDec (the differential tracking rate appropriate for this time)
next (this is essential!)

Check that the TCS shows that a differential tracking rate has been applied: a line near the top of the TCS Display should say "Differential Rate dRA dDec".

If no autoguiding is required, that is all that needs to be done.

If autoguiding is required, select a suitable guide star and send the probes to the correct position. Since the guide star will move in the sky at a different rate from the target, as the telescope tracks the target the relative position of the guide star and target will change during observations, and the guide star will move on the DS9 display. For this reason, it is important to select "track guide star" on the autoguider control.

Since the movement of the guide star is generally in a not easily predictable direction, if necessary move the probes in order to place the guide star in the centre of the DS9 display, to give on average the longest time before it disappears off the edge. Once it is obvious which way the guide star is moving, the probes can be moved again to give the maximum amount of time before it will be lost, e.g. if it is moving downwards, place it at the top. The length of time before the guide star will disappear off the edge will depend on the diferential tracking rate and the length of the observations.