Gemini Telescope Design

GoTo Problems and Cures

This is a brief description of possible causes of imprecise goto slews in general and with a Pulsar1 or Pulsar2 controller in particular.

1) **Polar alignment.** The most common reason.
   How can you tell? Dec error of different direction on opposite sides of the meridian. Dec drift at high declinations (50 degree and above). Not having a drift near the celestial equator is NOT a sign of good polar alignment.
   How do I cure it? Use King's method or wait for Gemini's new polar alignment tool coming in 2012.

2) **Inconsistent or imprecise coordinates.** Pulsar has no precession correction built in. Using J2000 coordinates for initializing and Jnow for slews gives errors. Databases may contain errors.
   How do I cure it? Sync after the first goto in a planetarium sw and use that for goto commands afterwards.

3) **Meridian flips.** If the optical axis is not perpendicular (more the rule than the exception) to the declination axis it results in large errors in RA after a meridian flip.
   How do I cure it? Use flip correction (Mount Parameters menu) or align the optical axis with shims. Flip correction will not work with a pure polar alignment. Flip correction will not work at all near the pole.

4) **Ra axis is not perpendicular to the Dec axis.** This shows up in a small RA error when you do large movement in DEC. You normally cannot cure this.

5) **Atmospheric refraction.** This can be several arcminutes under 30 degrees of altitude. Use refraction correction (User Parameters).

6) **Flexture of mechanical parts.** A not properly fixed camera can tilt several arcminutes after a meridian flip. Use conic collars on drawtubes.

7) **Diagonals.** They are practically never exactly 90 degrees and introduce huge errors when they are rotated for a more confortable view.