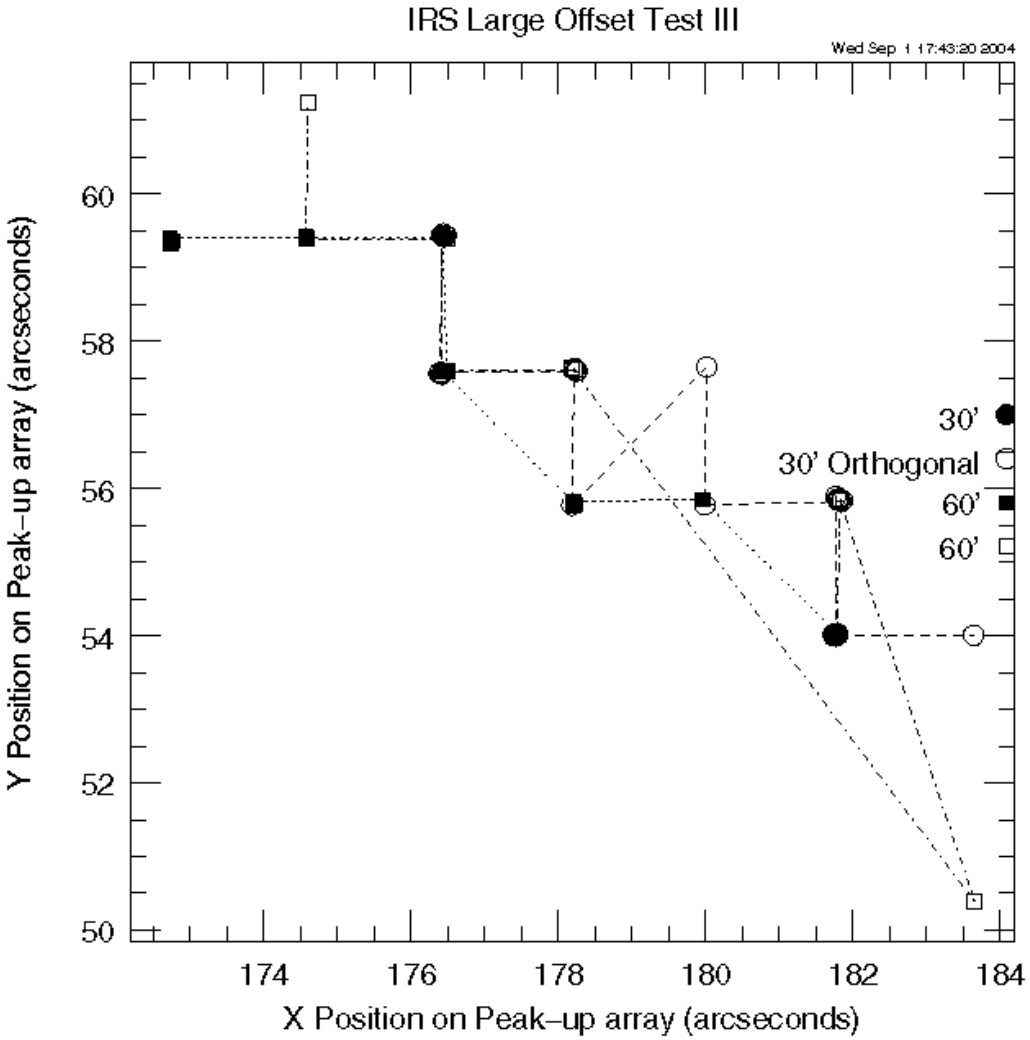
IRS Offset Test III

During IRS Campaign 12 we executed a third run of the IRS Offset test. This was done in anticipation of a gyro fix having become available since the last time this test was run in June. The IERs and targets (all in the CVZ) were exactly the same as those used in the previous test. The range of sclock times for this test is 778108100 through 778114896.

Figure 1 shows a rough and ready centroid analysis of the peak-up images. The files have only just arrived and have not been processed (e.g. dark subtracted, flat fielded, etc.) in any way. In addition, whereas previous analyses of this data relied on the IDP3 centroiding program at Cornell, the current effort was carried out using the IDL/ATV aperture photometry/centroiding algorithm. From Figure 1 it is clear from the apparent pixelation of the centroids that this algorithm is not terribly accurate. However, the general trend is clear and consistent across several data sets.

The initial “ping-pong” maneuver between two stars separated by 30 arcminutes (filled circles) showed almost no drift at all over about 30 minutes of elapsed time. However, the subsequent sequence of centroids for another pair of stars separated by 30 arcminutes in an orthogonal direction (open circles) shows a very sizeable average “drift” or offset of 26 arcseconds per hour, or 0.007 arcseconds per second. Similarly, another experiment using stars separated by 60 arcminutes (filled and open squares, which occur before and after an attitude reset) yields 25 and 28 arcseconds per hour of drift.

Of additional interest is that the drift is once again from the upper right to the lower left corner of the peak-up array. This is the same drift direction we saw in March and June, even though the field has rotated about 180 degrees during the intervening months. Since the detector is bolted to the spacecraft, this would appear to lay the blame on a particular gyro axis…


IRS Large Offset Test III
Wed Sep 1 17:43:20 2004
Y Position on Peak–up array (arcseconds)
X Position on Peak–up array (arcseconds)
60
58
56
54
52
50
174
176
178
180
182
184
30'
30' Orthogonal
60'
60'