Guidelines for use of new AO capabilities

Minimum flux parameter:

This parameter allows the use of clamped-denominator centroiding. It's useful at low flux levels (<50cts) to reduce errors due to noise in the centroids. The current setting of 10 should be sufficient for most observations and is automatically in effect. We are still in the process of characterizing the optimal settings for this parameter.

If the observer is working in flux levels near the minimum flux value (10cts), you should also load zero centroid offsets:

load wfp=ho, cent\_offsets=aocp:/default/cent\_offsets/co\_zero

Reconstructors:

Standard bright guide star

- Pixel gains: load wfp=ho, pixel\_gains=aocp:/tables/pixel\_gains/pixel\_gains\_lse\_sep03
- Reconstructor: load wfp=ho, reconstructor= aocp:/tables/reconst/lse\_mar03\_llt2

Optimal reconstructors:

Since these have not been fully characterized, we can offer the opportunity to experiment with them, but not a set a rules for when they should be used. The observer should be aware that the telescope operator can load the reconstructors, but the ultimate decision on whether to use a given reconstructor is up to the observer (usually made based on the strehl of the science images). The observer should also be aware that this process will take extra time to load and test each desired reconstructor.

Filenames ending in 'u' expect no central obscuration, but do expect an aperture mask on the outer diameter.

Filenames ending in 'w' expect no central obscuration, no outer aperture mask Filenames with neither expect both central obscuration and outer aperture mask.

Below there are instructions for use of the reconstructors and a list of Chris' optimal/Baysian level reconstructors which will help significantly with faint objects.

- Use pixel\_gains\_all

o load wfp=ho, pixel\_gains=aocp:/default/pixel\_gains/pixel\_gains\_all

- Choose and load a reconstructor based on the notes below load wfp=ho, reconstructor=aocp:/tables/reconst/<filename>
  - o Standard AO
    - alpha0r0001.txt -- for brighter objects/better seeing
    - alpha1r01.txt -- for fainter objects/worse seeing
    - alpha1.txt -- for faintest objects/worst seeing
  - o FQPM
    - alpha0r01u.txt -- no central obsc, for FQPM, bright star
    - alpha0r01w.txt -- no obsc at all, for white light source bright stars
- Note: the normal reconstructor is called lse\_mar03\_llt