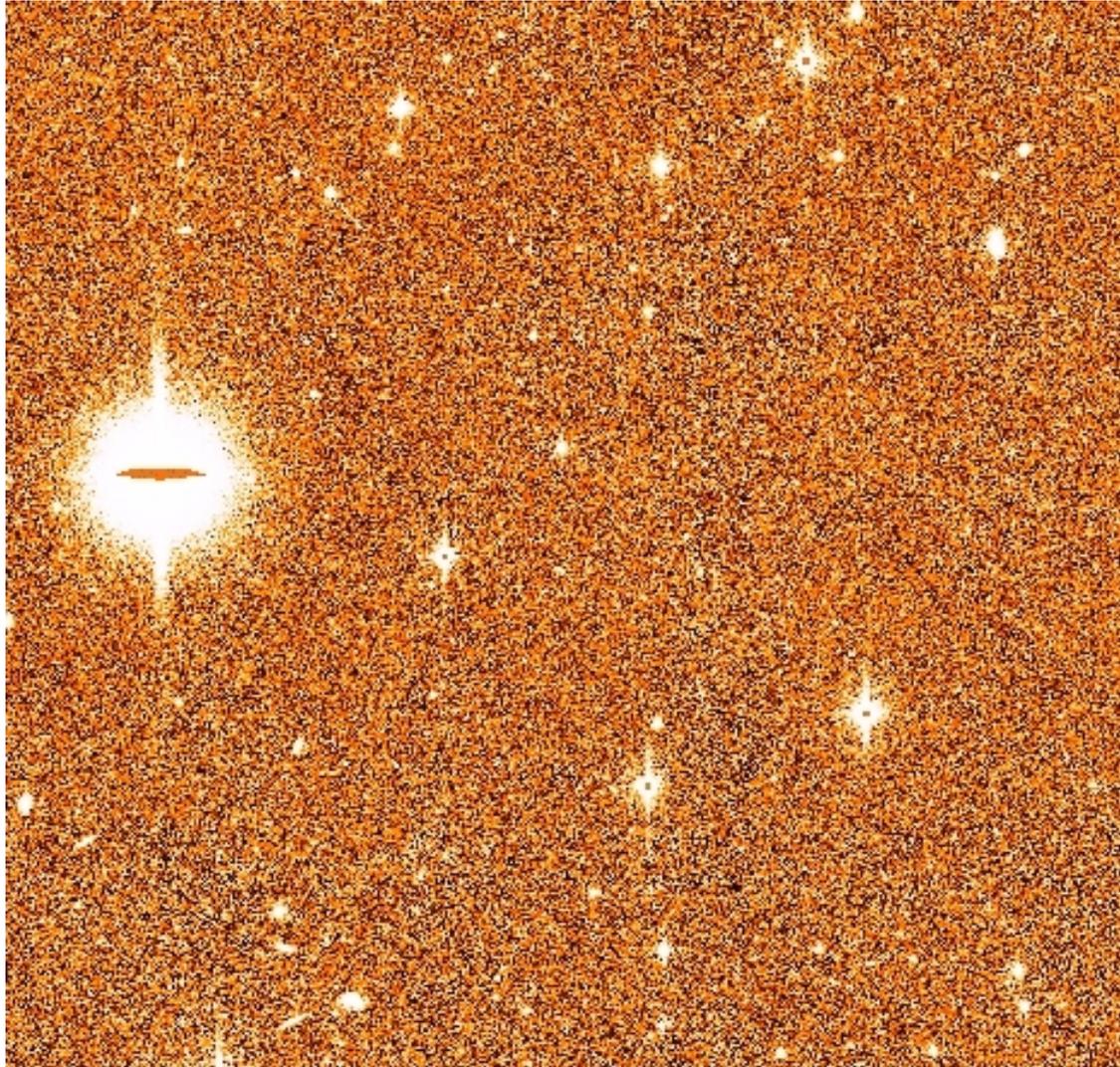




Measurements on DES Images with the LSST DM Pipeline

DARK ENERGY
SURVEY





DARK ENERGY
SURVEY

Using the LSST Pipeline

- Input is a directory containing *.fits files, registry, and mapper file
 - Registry file generated by genInputRegistry.py task
 - Mapper contains all relevant information about data
- Process[Cam].py task makes measurements on images
- Data analysis requires an obs_[cam] file



Using the LSST Pipeline

- `obs_decam` is not fully functional at this point
- Opted to use `obs_file` and `ProcessFile` task for generic analysis
 - `overrides.py` config
- Unable to incorporate masks straightforwardly due to nature of DES masks
 - LSST designed to use bitmasks for individual images
 - Only have weighted masks for images
 - Requires additional config



Analyzed DES Data

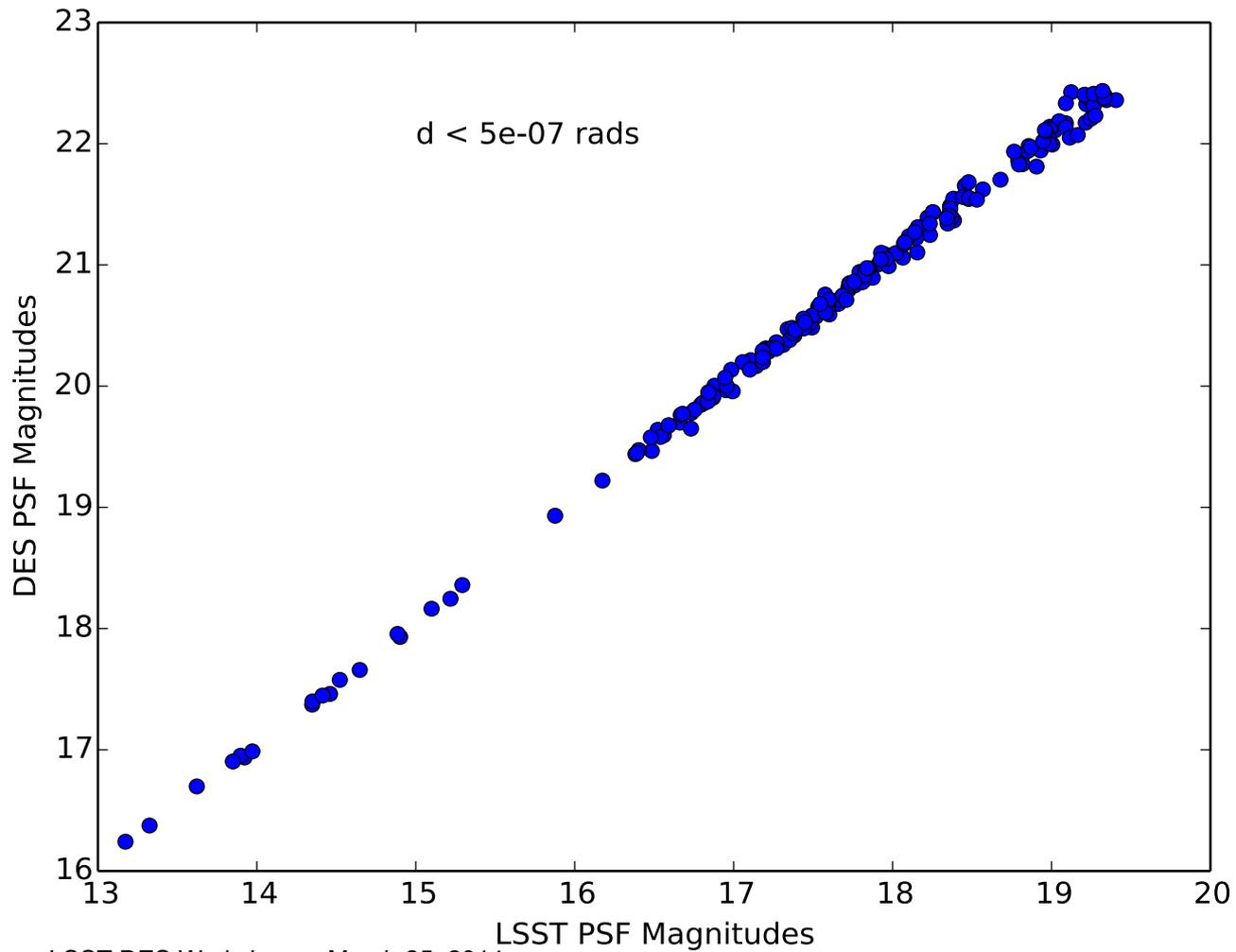
- Abell Cluster 2246-4457 Y band coadds
 - Abell is a rich galaxy cluster; contains ~4000 galaxies
 - Offers sources for shape analysis comparisons between DES and LSST pipeline
- Primary comparisons:
 - Photon flux
 - Gaussian flux
 - Shape/Extendedness matching
- Matched objects by angular distance resolution
 - Objects classified as “same” if $d < .1$ arcsecond

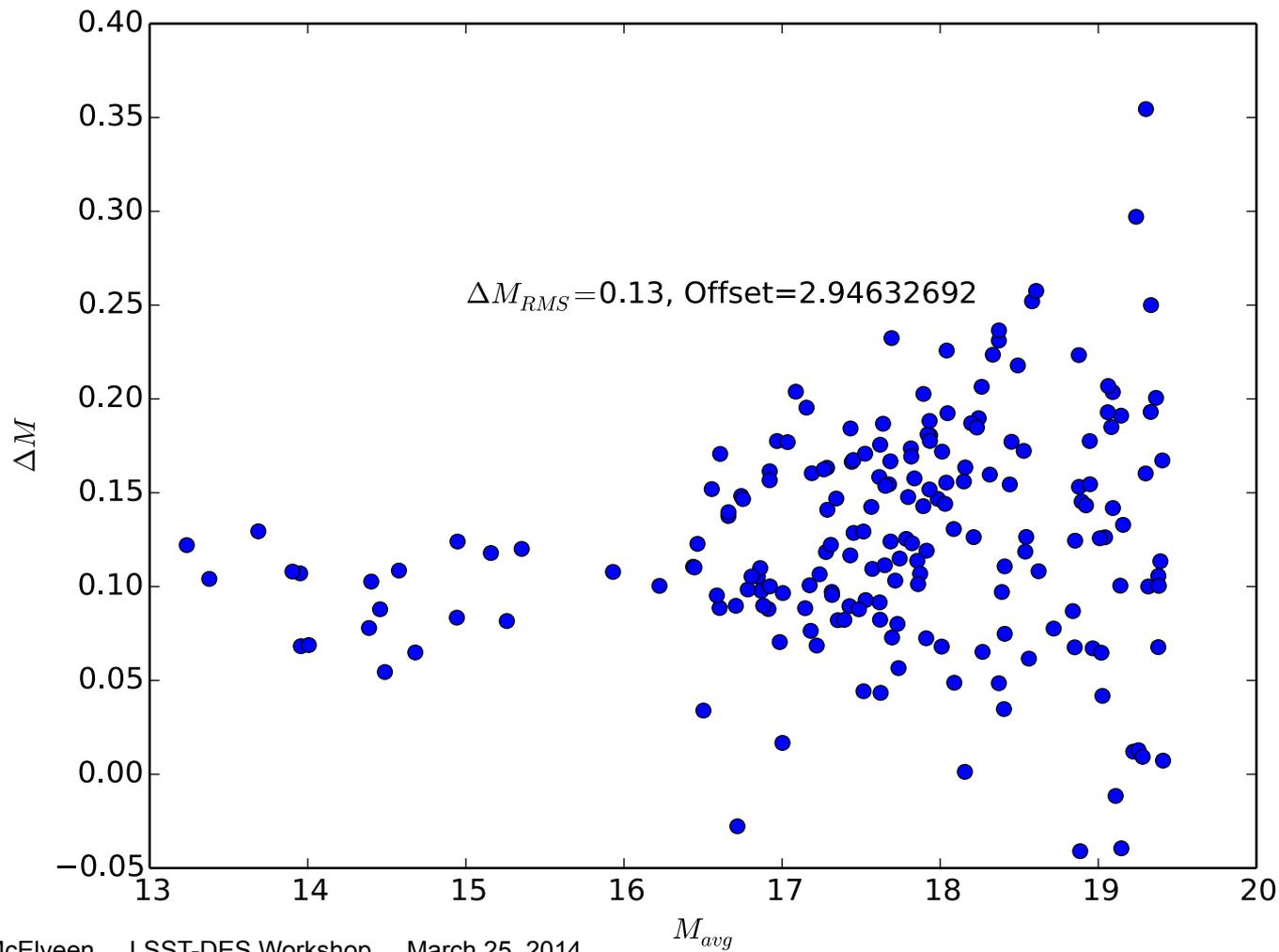


DARK ENERGY
SURVEY

Results of Initial Analysis

- Matches ~200 of 1064 (total detected by LSST)
 - Without consideration of DES extendedness parameter
- Noise detection differences in measurements
 - RMS difference in mags ~ 0.13

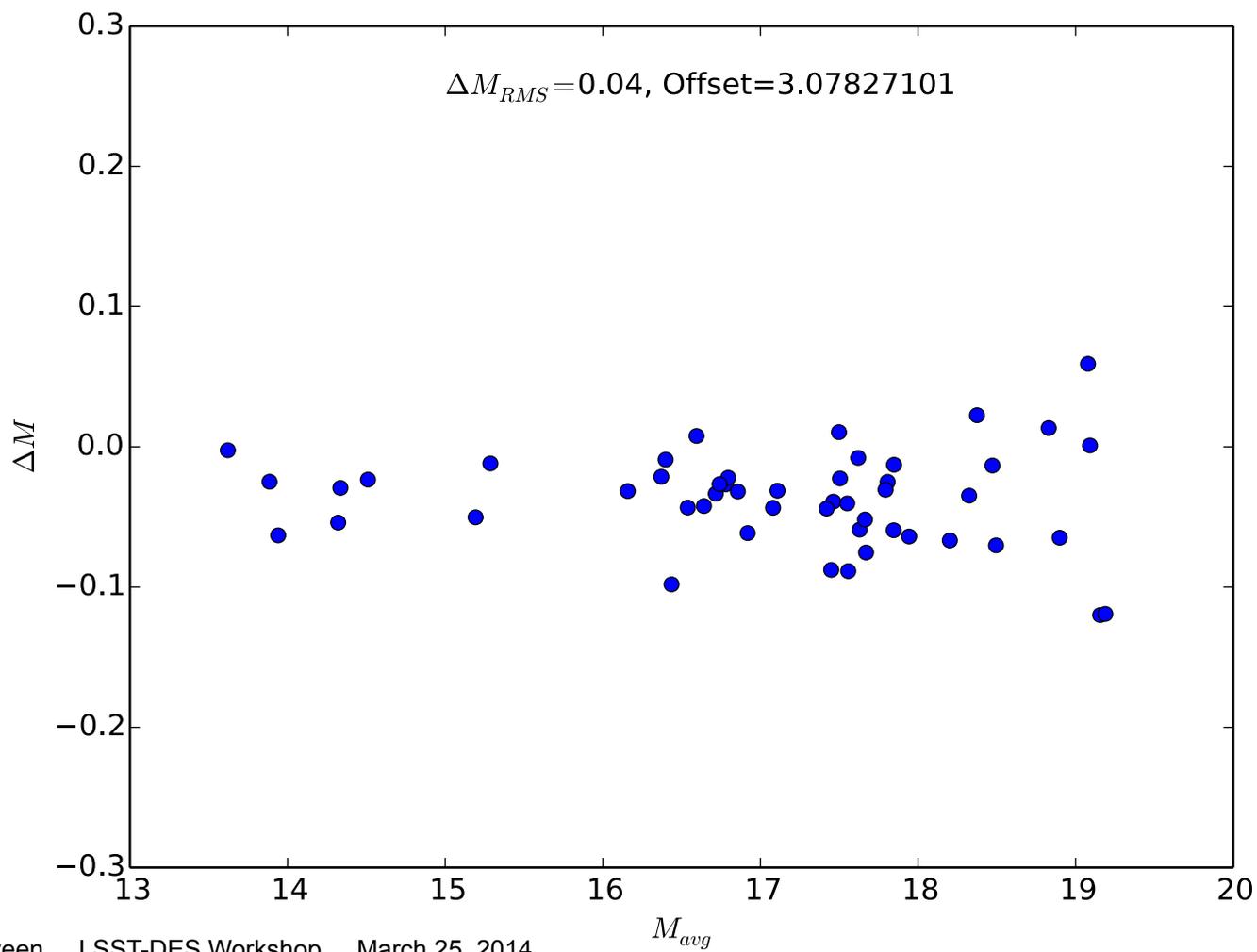






Results of Initial Analysis

- LSST classifies all objects as extended
 - Unable to compare shape measurements
- Comparison of objects DES categorized as stars gives better results
 - Only matched 50 objects of 187
 - RMS difference in mags ~ 0.04





Future Analysis

- Use object matching software (TopCat) or smarter algorithm to match more objects
- Test PSF determination on less populated images and globular clusters
- Include weighted masks in future analysis
 - Have rough config, may need modification
- Need to incorporate flux uncertainties
- Next comparisons should focus on bright objects
 - Need to characterize noise for faint object analysis