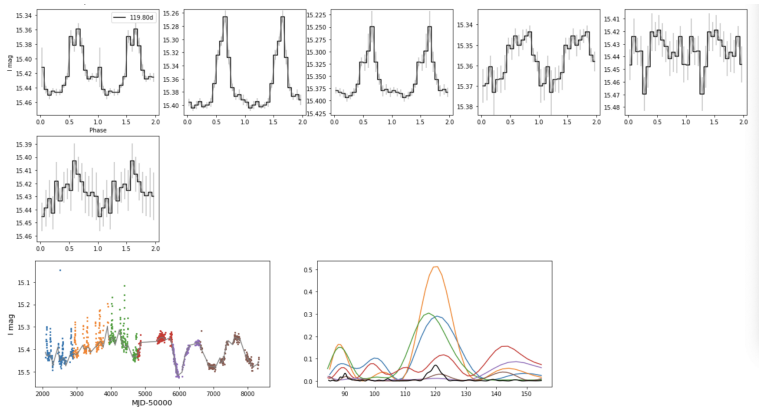
I. **additions 6/6/21**

- 142 already has basics in table and ToA table, but was not included in type/transition analysis (b/c thought it was potentially two different sources
    - in type 3 part of base num vs. stdev ratio, which makes sense
    - 

periodicity: not a complete disappearance after transition
    - not set apart in transition definition of median difference (as you can see, not necessarily a constant change in median, more about shape)
        - again, see notes below about whether or not to keep
        - of course moves around on plot when cut into pieces, but otherwise saw not a great way to define transition
        - this is more of an orbital transition that affects the super-orbital look as well
        - other option is to consider as "interesting source" and write a paragraph on it
- did basic analysis with new files, but will *better integrate into other analyses*
- latestsumm.csv: types now correctly numbered, and a bunch of extraneous/irrelevant columns deleted

II. sources/LCs with problems

- 77 (which we should replace based on new paper anyway)
- calibration between epochs (especially in type 6 sources, maybe some type 5)
    - if they looked uncalibrated, set medians to the same value when doing periodogram search & when adding info like skew to table
    - note: calibration in getIV *does not* currently calibrate the V band (keep in mind for color, feel free to change)
- 12 and 75 are the same source
- weird color-mag for 10 -- I guess possible but has same shape has color-mag of 73
- 25 -- maybe just uncalibrated but also looks fairly different between epochs
- table for 51 not working; not sure if there are files for source numbers with letters in them (3-4 sources)

III. potential directions (and where to find starting code)

- error on periodogram (not sure if we want)
    - bootstrapping in ____
    - width of peaks in ____
    - other papers simulate similar LCs
- width, height, spacing of peaks
    - including width at different percentages (e.g. width at 20% and 90% of height)
- quantifying flattening at bright values in color-mag
- more on X-ray (max X-ray luminosity, comparing to Swift data some more)
- PCA

IV. tables

- **final table:**
- allsummtab.csv (alls)
    - older version: summtab.csv (summ)
- sourcefiles.csv (cross)
- part2files.csv (usually join with ascii file to make cross2)

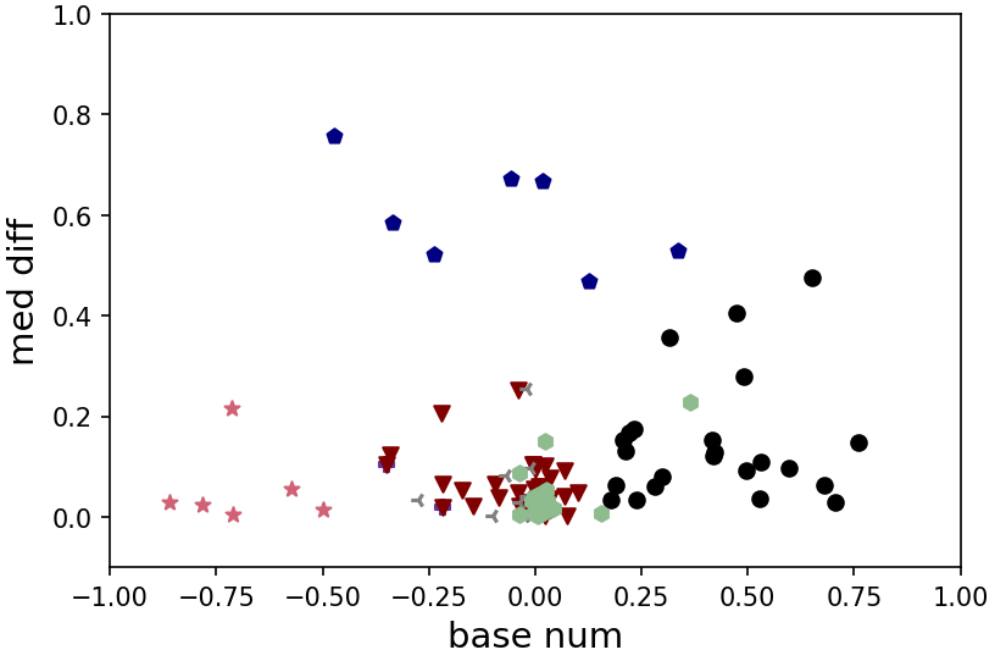
- phasetab.csv
- smc_x_m03_zar_match_OGLE_v2.ascii (full)
- qualitative periodicity table

V. jupyter notebooks: "final" notebooks that I went over to clean up/set you up for success

- FINAL_colormag
- FINAL_quiescentpart -- **check this out b/c I may've forgotten to discuss at the final meeting**
- FinalFigures
- SuperorbitalTimescale
- FINAL_ToAs
    - can save example procedure from here
- FINAL_PeriodbyYear

VI. other (potentially useful) jupyter notebooks that I skimmed through but didn't really change

- PredictingOutburst notebooks (e.g. with other good periods) but they should be in good shape
    - for (potentially) new periods: predicted the next X-ray outburst
- original periodogram analysis (SplinePulsatingSourcesBasic and Part2Analysis)
    - long, unruly function so let me know if you have questions
    - don't overwrite e.g. the folding info (or save old) b/c overwrite for e.g. type 4 sources
    - sources broken up by notebook based on if they have spin period measurement or not
- OrbitalProperties
    - where I developed what to save based on phase-folded data (amplitude, measure of symmetry etc.)
- QuiescentSources
    - very first part on src 55 (quiescent and then type 1) important
        - found that the 'best' period of ~127 days only present in flaring part, whereas 95.36 present throughout
    - otherwise sort of outdated, but investigated a list of what I considered 'quiescent' at the time (so type 6/maybe some type 5) vs. gradual/slight variation (a.k.a type 5 now for the most part)
    - a bunch of individual periodicity follow-ups
    - **found that a bunch are aperiodic** (original discovery that more quiescent → aperiodic)
    - but also searched at higher periods (than 200 days) since these sources could just be on longer timescales
    - also started quantitative separation of these types (standard deviation and kurtosis at the time)
- TransitionDefinition
    - write now, only need meddiff plot from this notebook, but see note at bottom about another direction to go in if you'd like (type1t function instead)



- remaining to check on/explain

- FinalTypes (just show how it's calculated, though don't necessarily need)
- SuperOrbitalFeatures (e.g. feature width, height)
- OpticalvsXrayPeriod
- TypeIIOutbursts

VII. module: ogle.py

- some functions were only really used early on or in early versions of super-orbital types
- functions that are repeatedly used
  - getIV: how to grab I and V band LCs
    - inefficient, but often have to specify if source from part 1 or 2 (spin period or not)
    - if not working, try using cross2 instead of cross and mlist2 instead of mlist1
  - colormag: get interpolated I and/or plot color-mag diagram
  - splinedetrend
  - gettype
  - tplot
  - when checking for monotonic change: monotonic
- period search
  - periodogram
  - meanphase and phasestep
  - findpeaks
  - aliasarr and findpeaks
  - characterizing phase-folded data
    - combine
    - phase_dict
    - symm
    - test_bins
- some functions that may not be called in final notebooks but could be helpful esp. in period search
  - finddense
  - denselcpd
  - yrpd
  - rollpd

VIII. npz files

IX. meta-table

X. some things about super-orbital types

A. double check, but I think I ultimately used the third brightest and third faintest points for base number, to protect against spurious points

B. also, stdev ratio does not use spline detrending in most straightforward way
   1. accounts for sharp features like those in type 4

C. I'm still not 100% sure on transition types, but I am "sure" of the significance/helpfulness of the ones that have partial type 1-ness

D. if just want transitions in/out of type 1 (that region of base num vs. stdev): see type1t in TransitionDefinition
   1. 11, 19, 52, 97 (all transition anyway)
   2. 104 from type 2 (happy with that, although could say it just comes from shape of dip making return look like type 1 flare)
   3. no others from other types