Evaluating the Pan-STARRS Variability Parameter

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By Thursday (4/18) we need: well thought out section titles and plots that show all the points we wanna make

LS analysis on ATLAS Pathfinder Telescope data, verified PS variability criteria

INTRODUCTION

- why we care
- what made us care about this project
- NO structure / distance stuff (maybe put it in looking forward section at end)
- talk about PS catalog
- variability surveys (discuss other attempts to measure variables across the sky)
- why are variables interesting
- why do we want to find variables and care about where they are located
- Summary: we ran LS, analyzed stars, why did we do it all
- Mention what will be discussed: "in section 2 we describe the observations we used..."

ATLAS PATHFINDER 1 OBSERVATIONS

- we used data from ATLAS
- supplemented with ATLAS data [REF TONRY] (possibly make this s subsection)
- exposure time
- observation dates
- what was the weather like during observations
- PSF FWHM variations (only include if we discuss crowding)
- 'we recieved the reduced image data from the ATLAS pipeline; which gave us RA, Dec, mag, etc...'

Data

- how we got mags out of data...
- $l^{II} = 202°$
- $b^{II} = \pm 5$

Sorting Pattern

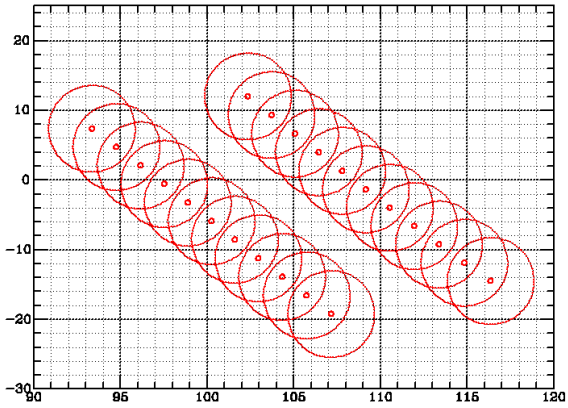


FIG. 1: *Stars were grouped in the pattern shown (down the collected observations)*

CONSTRUCTING STELLAR LIGHT CURVES

- how we selected stars (12+ obs, 1x1 deg^2, etc)

LOMB-SCARGLE: IDENTIFYING STELLAR VARIABILITY

- extract variability from LS
- describe how it works and why we used LS
- major aliasing at 1 day and 0.5 day periods
- things that fall at at -50 (in Figure 2) means that those are VERY probably variable stars

- roughly _____ stars fell at -50 in Figure 2
- 320,000 stars tested for variability
- other stars (outside of 320,000) are statistically unlikely to be variable

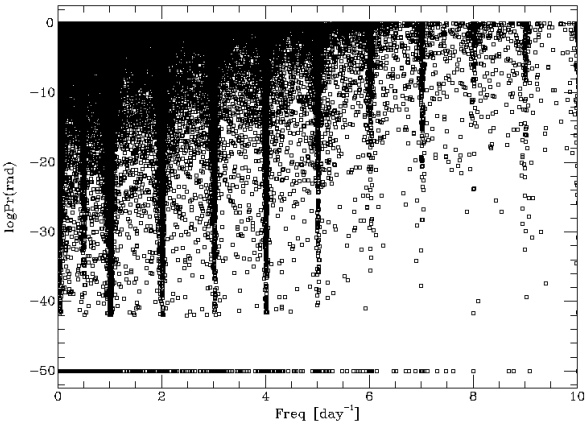


FIG. 2: *prob(f) of 80,000, most variable, stars LS was run on*

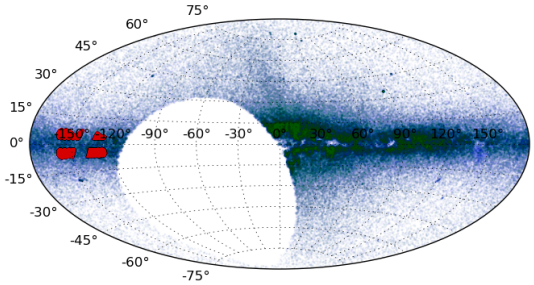


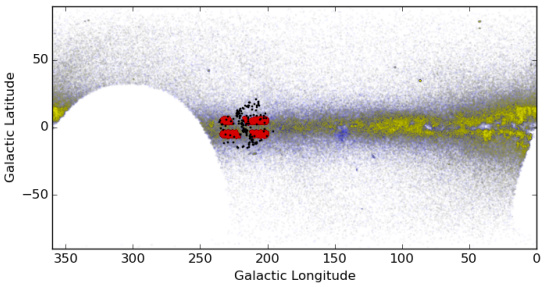
FIG. 3: *Aitoff projection of observed and PS RR Lyrae candidates. Blue are candidates from PS that ¿= 0.05, green are PS candidates that ¿= 0.2., observed data in red.*

DISCUSSION

- Evaluation of PS criteria
- what went wrong
- what could have gone better
- future outlook
- we could map spiral arms using x y and z

RESULTS

- compare with PS
- density/distribution of variables in sky
- (what LS gave us for our catalog)
- put a table with 5 stars, to show off part of catalog



(a) *Aitoff map.*

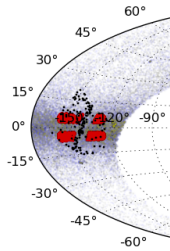


FIG. 4: *Aitoff projection of observed and PS RR Lyrae candidates. Blue are candidates from PS that ¿= 0.05, yellow are PS candidates that ¿= 0.2., observed data in red, simbad in black.*

SUMMARY AND CONCLUSIONS

[TALK ABOUT IT]

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† Observational Astronomy 301