­GJ1132b Paper Outline

Target to 1st/2nd year grad students studying exoplanets

1. **Title**: Constraining neutral hydrogen outflow and stellar host Lyman-alpha reconstruction for transiting super-Earth GJ1132b
2. **Intro**
   1. Specifics about GJ1132
   2. Close enough for atmospheric characterization
   3. Want to do as much analysis on nearby targets as possible before JWST
   4. Want to understand atmospheric evolution and constrain habitable conditions
      1. Studying planets slightly too hot tells us what atmospheres are possible at cooler temps
   5. M dwarfs make habitability tenuous (probably), so studying rocky planets with M dwarf hosts is valuable
      1. High variability at UV wavelengths like lya
   6. UV studies can tell us about the atmosphere of planets, in particular hydrogen content
      1. This has to do with atmospheric evolution and volatile retention
   7. What did I learn specific to this project while working on it
   8. At least a paragraph about GI436
   9. Examine observing proposal
   10. Summarize LyA transit field (some transits at lya for hot jupiters, none as deep as 436…)
3. **Methods**
   1. Data
      1. Info about the observations, time-tag stuff, HST specs
   2. Analysis
      1. MCMC, poisson statistics for 4 light curves
      2. MCMC for the lya reconstruction
4. **Results**
   1. Light Curve results
   2. UV Flux results
5. **Discussion**
   1. Placing results in context
6. **Conclusions**
   1. Last take-aways

**Plots to include:**

RP PDFs from the MCMC

Light curves

Spectra

LyA reconstruction