

Group Projects: RVs & Transits



2016 Sagan Summer Workshop, July 18 – 22 - Pasadena

What is this group project about?

- ✧ The Hands-on sessions are introducing the tools needed for the project project
- ✧ You were asked to choose one of **six different science questions (six for Rvs and six for Transits)**
- ✧ On Wednesday afternoon you will start working towards your **7-10 min presentation to be given on Friday** afternoon

Science Projects: RVs

- Group 1: Effect of planetary period on planet detectability
- Group 2: Effect of planetary amplitude on planet detectability
- Group 3: Effect of stellar inclination on planet detectability
- Group 4: Effect of stellar rotation period on planet detectability
- Group 5: Effect of stellar spots on planet detectability
- Group 6: Effect of number of RV observations on planet detectability

Science Projects: Transits

- Group 1: Effect of host brightness and planet line width on detectability of transit spectra
- Group 2: Effect of wavelengths and spectral type on light curves
- Group 3: Effect of limb darkening on derived spectrum
- Group 4: Effect of planet parameters
- Group 5: Using forward models to explore planet temperature and composition
- Group 6: Effect of clouds on spectral retrieval

How to develop your project

1. What question(s) are you trying to answer?
2. What are your hypotheses?
3. What methodology did you use to test your hypotheses?
4. What did you find?
5. What conclusions can you draw?
6. What, if any, future work is needed?

ABOVE ALL: LEARN, HAVE FUN & BE CREATIVE!!

Example

Template Group Project Slides

Effect of planetary period on planet detectability using the RV-technique

(names and affiliations)

Effect of planetary period on planet detectability using the RV-technique

Project Goal:

Investigate if, with the RV technique, it is easier (more difficult) to detect short- (long-) period planets, especially Earth-type

Effect of planetary period on planet detectability using the RV-technique

Hypothesis:

Short-period planets might be easier to detect since they require less time consuming observations....

Methodology:

Do several tests, for instance: set the planetary period to 2.2 days and then to 100 days, while keeping the amplitude fixed..

Effect of planetary period on planet detectability using the RV-technique

Results:

We find that bla, bla, bla....

Analysis:

Here is the place where you provide all the details of your analysis (i.e., how did you derive the results ?).

Remember: even small details can be really valuable !

Effect of planetary period on planet detectability using the RV-technique

Conclusions:

Our analysis shows that bla, bla, bla....

Future Perspective:

That is the place where you can say what other tests/measurements/studies would be useful to address the science question you have worked on.

Reference Documentation

1) Background Information:

RVs: <http://adsabs.harvard.edu/abs/2016PASP..128f6001F> (Fischer et al. 2016)

Transits: <http://adsabs.harvard.edu/abs/2014PASP..126.1134B> (Beichman et a. 2014)
<http://adsabs.harvard.edu/abs/2016ApJ...817...17G> (Greene et al. 2016)

2) Hands-On Guide:

RVs: http://nexsci.caltech.edu/workshop/2016/RV_hands_on_session_guide.pdf

Transits: http://nexsci.caltech.edu/workshop/2016/JWSTtransit_overview_document.pdf

3) Project Groups:

RVs: http://nexsci.caltech.edu/workshop/2016/Questions_for_RV_hands_on.pdf

Transits: http://nexsci.caltech.edu/workshop/2016/JWSTtransit_questions.pdf