

2021-2022学年秋季学期 《理论天体物理专题》

祝伟

2021.9.17

0. 本人介绍

- 经历

- 2017年8月，美国俄亥俄州立大学（OSU），博士毕业
- 2017年9月至2021年2月，加拿大多伦多大学，博士后研究员
- 2021年2月起，清华大学天文系，助理教授

- 研究兴趣

- 系外行星：搜寻，统计分析，多体系统动力学
- 微引力透镜：巡天数据分析，理论研究
- 恒星级黑洞：搜寻，统计分析

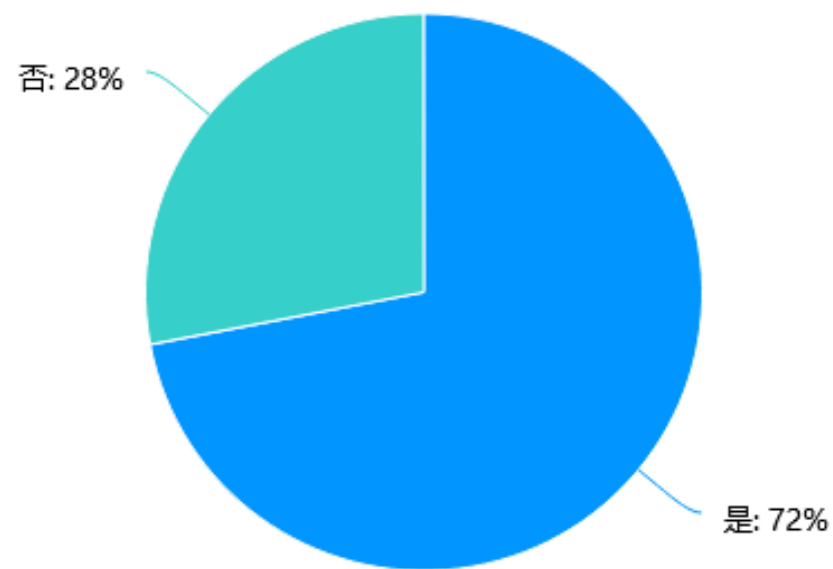
- 更多信息详见我的个人网站

- <http://astro.tsinghua.edu.cn/~wzhu/>

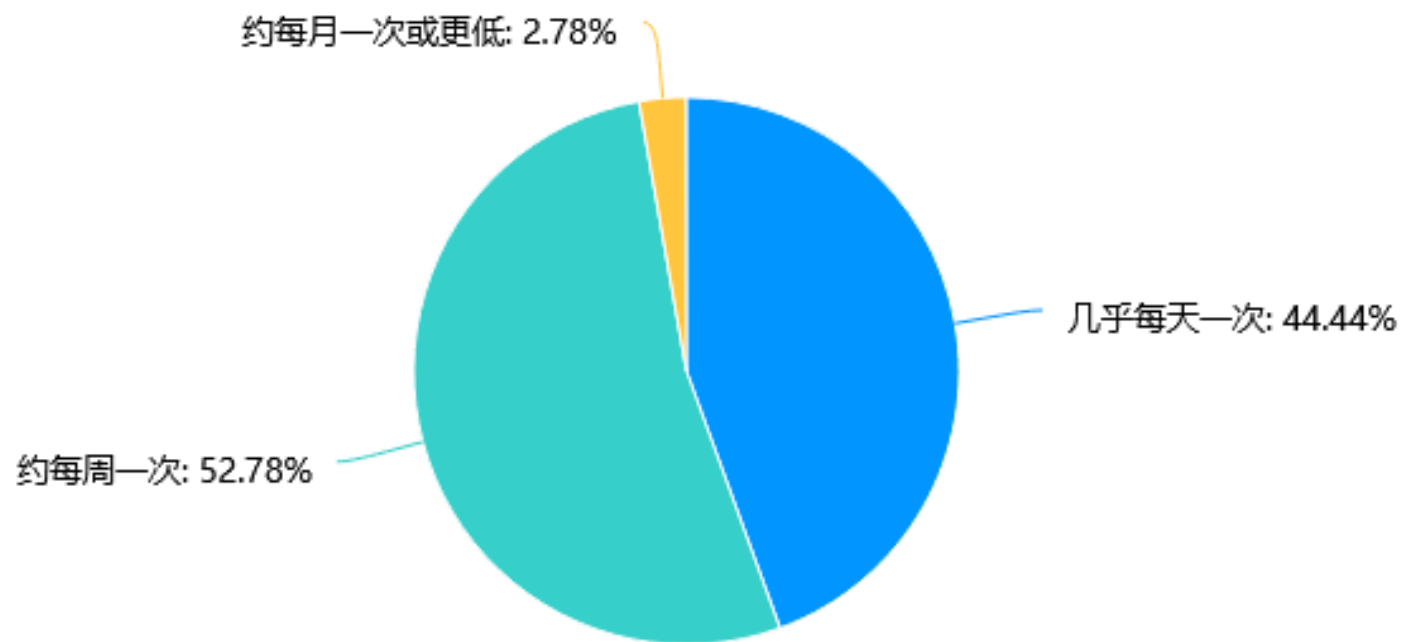
1. 课前调查

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- 是否经常浏览arXiv?

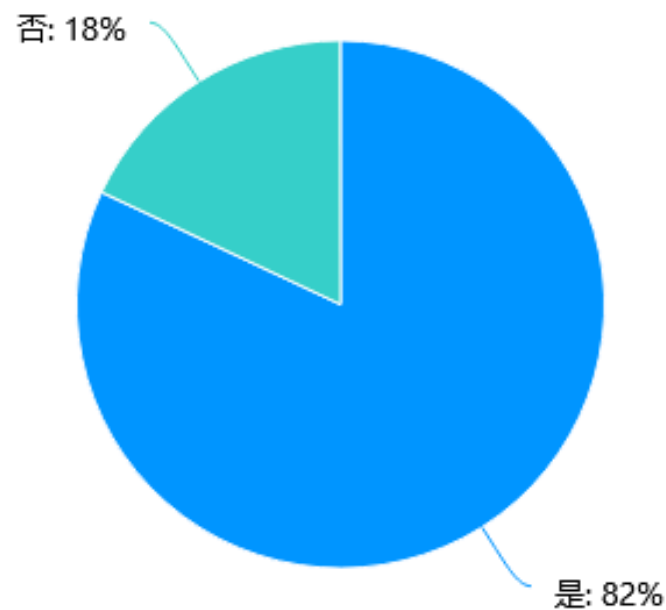
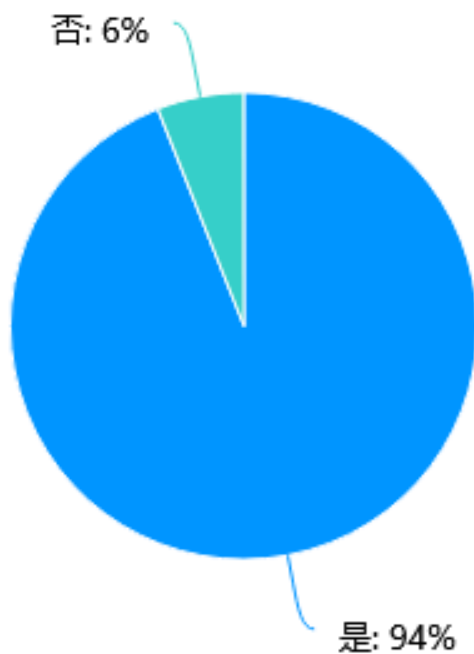


- 浏览arXiv的频次?



1. 课前调查

- 是否对非本领域的研究感兴趣?
- 是否愿意花时间精读一篇非本领域的研究论文?



2. 课程介绍

(原word文件已更新至网页)

3. How to find, read, and present a research paper?

Astronomy Paper Seminar Participation Guide & Reading Walkthrough

Show affiliations

[Cooke, Kevin C.](#) ; [Connelly, J. L.](#) ; [Jones, K. M.](#) ; [Kirkpatrick, Allison](#) ; [Mills, E. A. C.](#) ; [Crossfield, Ian J. M.](#)

Welcome to the wonderful world of scientific inquiry! On this journey you'll be reading many $\times 10^N$ papers in your discipline. Therefore, efficiency in digesting and relaying this information is paramount. In this guide, we'll review how you can participate in your local astronomy seminars. Participation takes many forms, from contributing a recently discovered article to the discussion of a published paper. In this guide, we'll begin by providing some suggested introductory activities for beginner scientists. Then we discuss how to locate papers and assimilate their results. Finally we conclude with a discussion on paper presentation and note storage. This guide is intended for an undergraduate and graduate student audience, and we encourage faculty to read and distribute this guide to students.

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Bibcode: [2020arXiv200612566C](#) 

Keywords: Astrophysics - Instrumentation and Methods for Astrophysics; Physics - Physics Education

E-Print Comments: 5 pages, 0 figures

3.1 Where to find papers

- Astrophysics Data System (ADS)
 - <https://ui.adsabs.harvard.edu/>
- arXiv (astro-ph)
 - <https://arxiv.org/archive/astro-ph>
- Other paper databases
 - Google scholar
 - INSPIRE
 - ...
- orcid
 - Open Research and Contributor ID, 开放学者身份标识
 - www.orcid.org
 - [被科研人员忽略的ORCID —— 如何注册和使用? 意义何在?](#)



3.2 How to find papers



<https://www.nature.com/>

<https://www.science.org/>

Social media

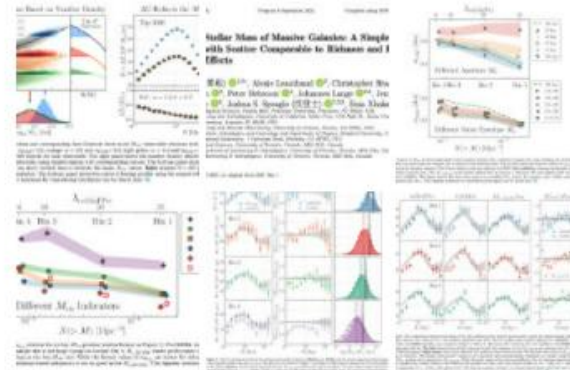


光头怪博士

#astro-ph# 论文日! 今天终于轮到自己的paper了! 而且还是憋了好久好久的“居家隔离论文”:

网页链接

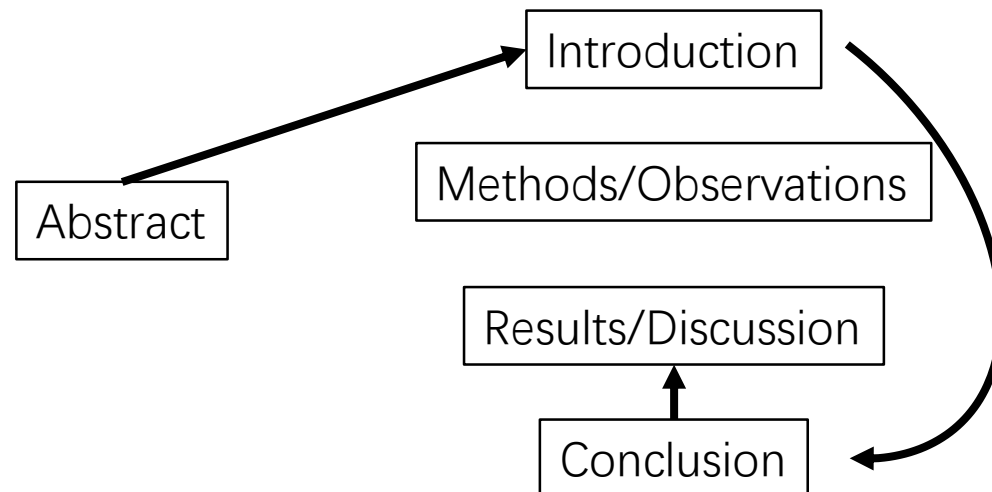
这篇文章里我们用弱引力透镜方法探索近邻大质量星系中不同定义下的恒星质量测量和其暗物质质量关系的紧密程度。我们还讨论了如何利用单个星系的质量测量去构建比较有效的大质量暗物质 [展开全文](#)



09月08日 09:07 来自 新版微博 weibo.com

3.3 How to read a paper

- Papers (mostly) have a clear, common structure:
 - Title, authors, abstract, introduction, methods/observations, results, discussion, conclusion.
- Read sections in their order: *Not recommended!*



3.3 How to read a paper

- Read a paper → Read a reference in the paper → Read a reference in the reference paper ...
- Make good use of Google and Wikipedia
 - Both need VPN...

[Wikipedia on Kepler mission](#)

3.4 How to present a paper?

- Have a clear structure!
- Don't be afraid of spending (too much) time on the research background.
- Summary sentence/Take-home message
- Key figures (or tables)
 - Do you really need this figure/table?
- Your assessment/opinion
 - Do you believe the results? Why?
- Conclusion
- Back-up slides

3.4 How to present a paper?

- Include slide numbers
- Explain the figure axes, labels.
- Equations?
- Use visible font size and colors
- Proper reference whenever necessary (including figures from the internet)
 - First author + year of publication

- Do I need this figure to prove my point?
- Do I need **all** components of this figure to prove my point?

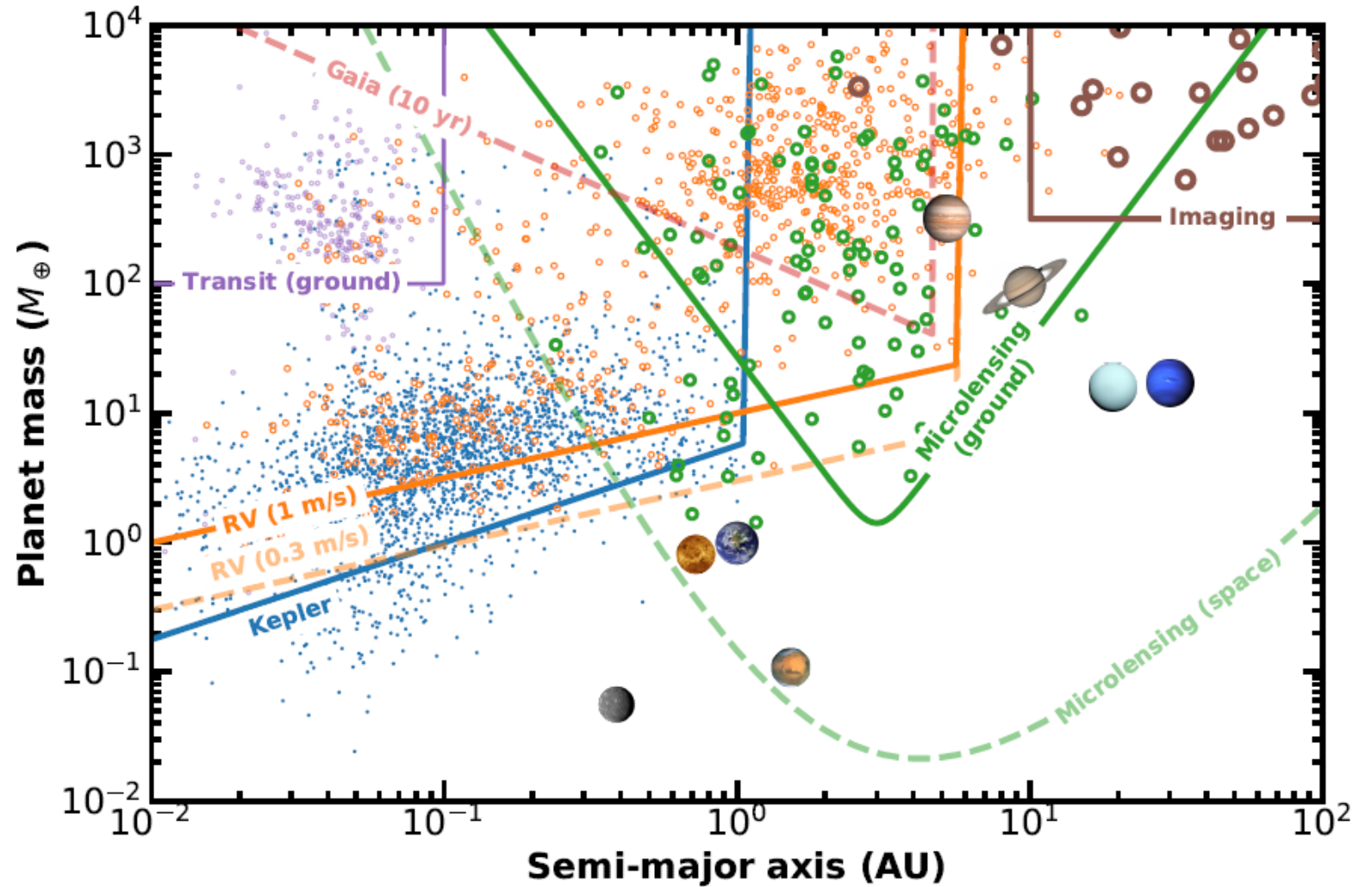
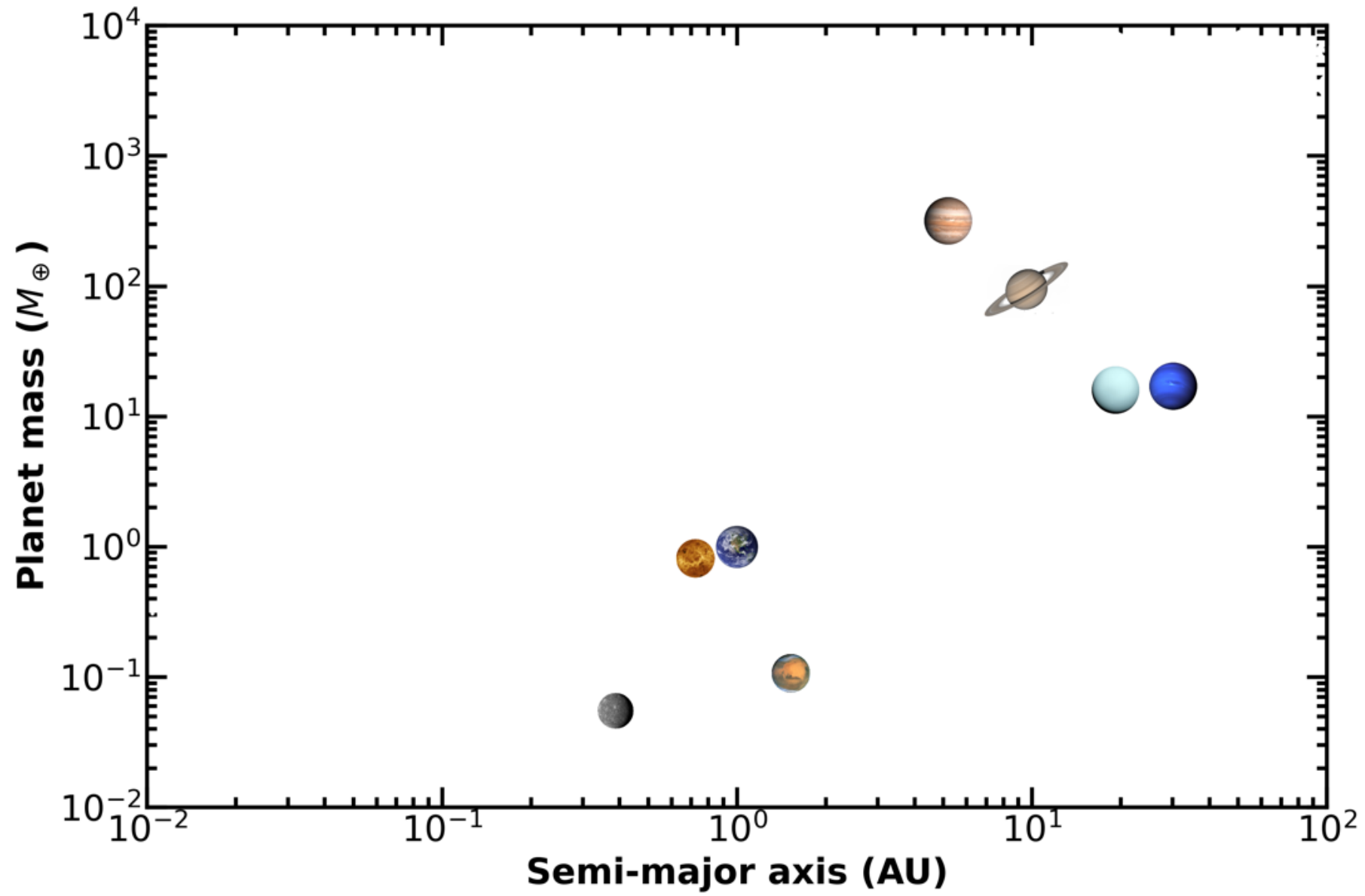
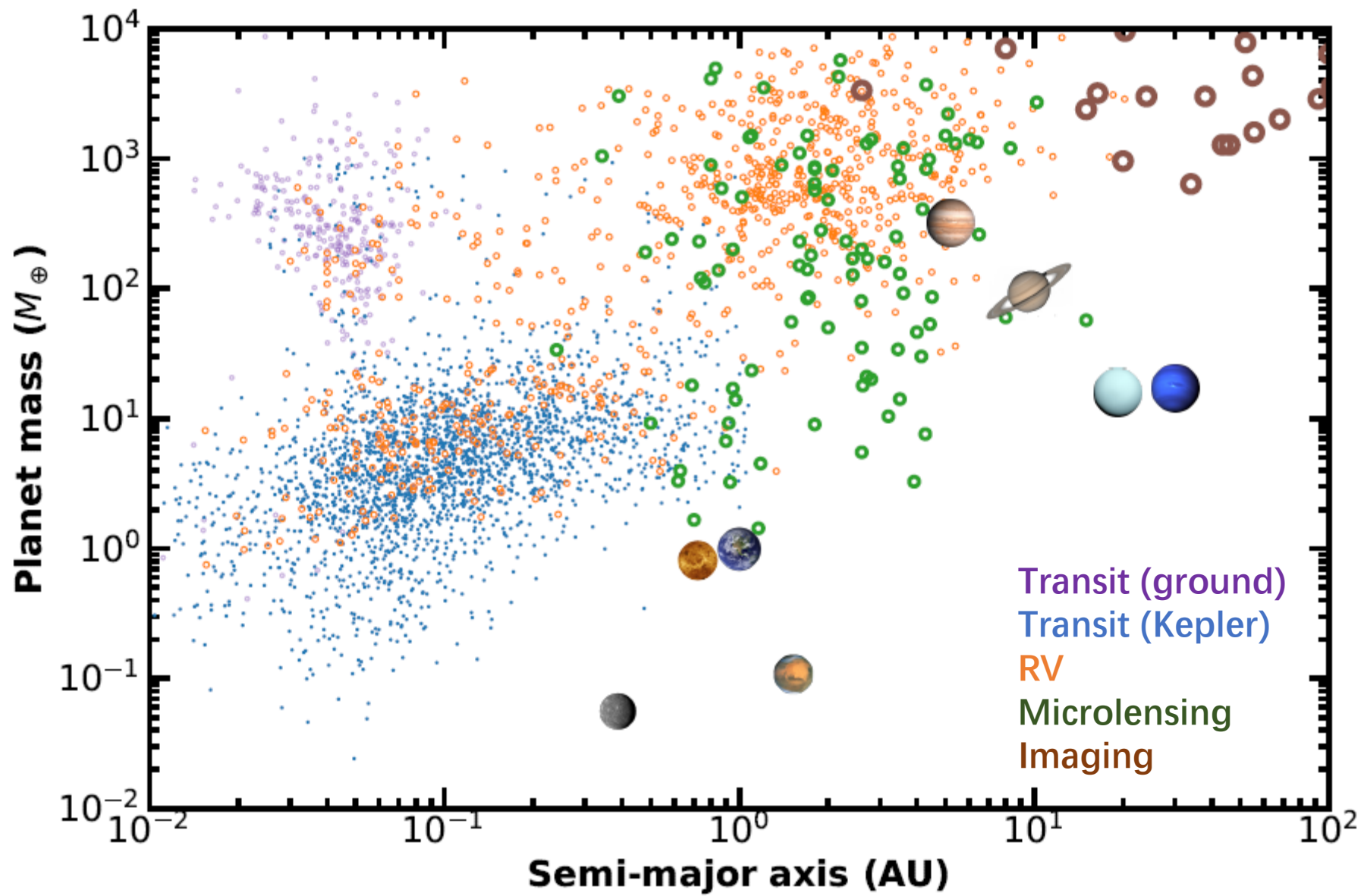
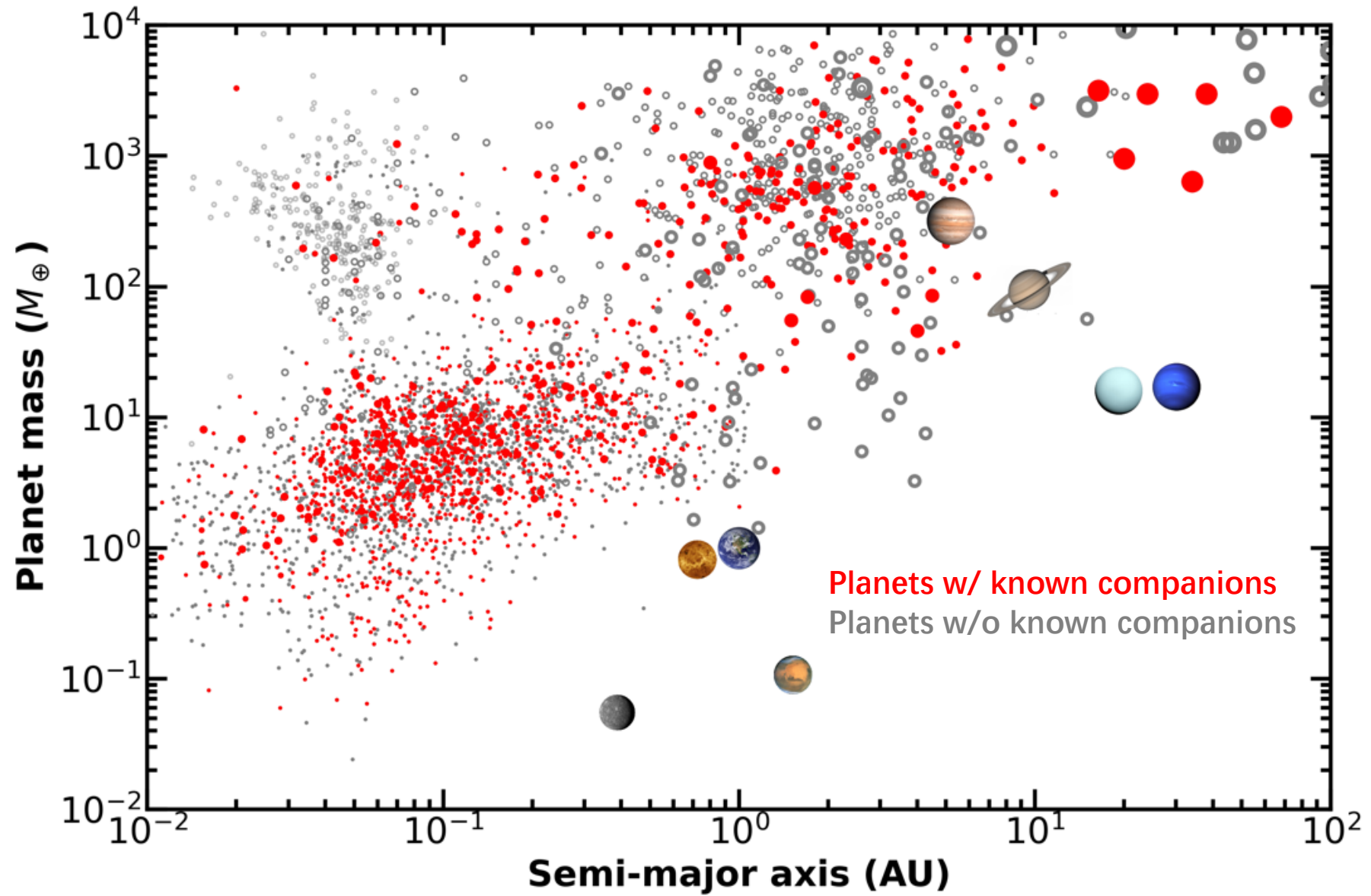


Figure from Zhu & Dong (2021)







Richard Feynman: “If you can’t explain it simply, you don’t understand it well enough.”

3.5 Asking questions

- Be able to ask questions
 - Clarification questions: What does TESS stand for? What is that red line in the figure?
 - Scientific questions: ~~What about magnetic field?~~
- Be able to answer questions
 - Prepare a few (3-5) questions when preparing the talk.
 - 本课程问答环节可以用中文(?)

Present paper (Requirements)

- Enough description (> ~5 min) about the background
- Take-home message
- (Optional) Your assessment/opinion
- Summary slide (not a “Thank you” slide)
- A list of questions you would ask as an audience (3-5)

总结

- 课程介绍
 - 日程安排, 关键时间节点
- 哪里找文章, 如何读文章
 - ADS, astro-ph, research highlight
- 如何做报告
 - 注意事项, 要求

Speed Talks