

# ExoPAG SIG#2: Exoplanet Demographics

## Co-Chairs

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&

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# SIG#2's Goals: Building on SAG13

## SAG13's Goal:

- **Primary:** Evaluate what we currently know about planet occurrence rates, and especially etaEarth, by consolidating, comparing, and reconciling discrepancies between different studies.
- **Secondary:** To establish a standard set of occurrence rates accepted by as much of our community as possible to be used for mission yield estimates for missions to be considered by the [2010] decadal survey.



[SAG13 Final Report](#)

## SIG#2 Foundational Goal:

“To extend the SAG#13 work over a wider parameter space, by bringing together groups in the community to discuss their cross-technique and cross-population results, and identify work needed to move forward.”

# SIG#2 Meta-Studies Report

## Enabling Exoplanet Demographics Studies with Standardized Exoplanet Survey Meta-Data



- Report completed April 2023 under the leadership of J. Christiansen and M. Meyer
- The report finds that demographics re-analyses or meta-analyses are stymied by the lack of survey meta-data
- It presents a list of data and products to include when publishing exoplanet survey data that would enable other to better utilize their results






# Leadership & Logistical Updates

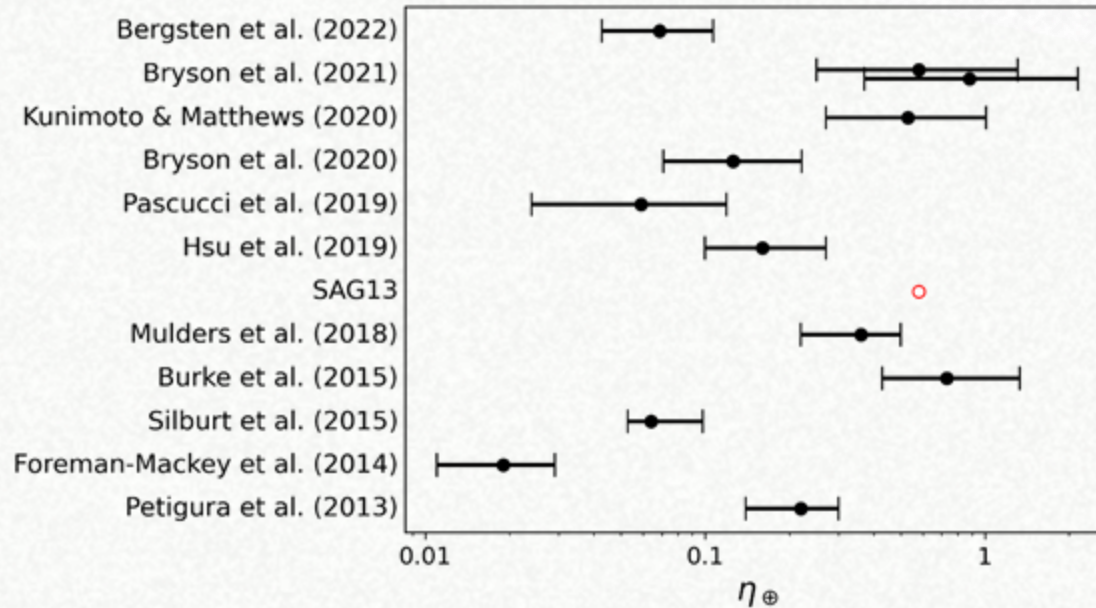
- **June 2023:** R. Fernandes and S. Johnson took over from previous co-chairs J. Christiansen and M. Meyer
    - Jennifer Gregory still keeping the ship righted
  - **January 2024:** ExoPAG Executive Committee approved Steering Committee:
    - Natalie Batalha (UCSC)
    - Bertrand Mennesson (JPL)
    - Samuel Quinn (Harvard/CfA)
    - Elisa Quintana (NASA Goddard)
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# Leadership & Logistical Updates

- Regular meetings on the Second Friday of the Month at 1 pm Eastern time
  - Significant recruitment efforts have increased member numbers by 30%
    - Especially focused on recruiting ECRs, which makes up the majority of new members
  - Established a short Code of Conduct included in meeting reminder emails focusing on
    - Respectful Communication
    - Active Listening
    - Constructive Critique
    - Harassment-Free Zone
    - Inclusivity
    - Confidentiality
    - Timeliness
    - Tech Etiquette
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# Current Focus: A Review of etaEarth

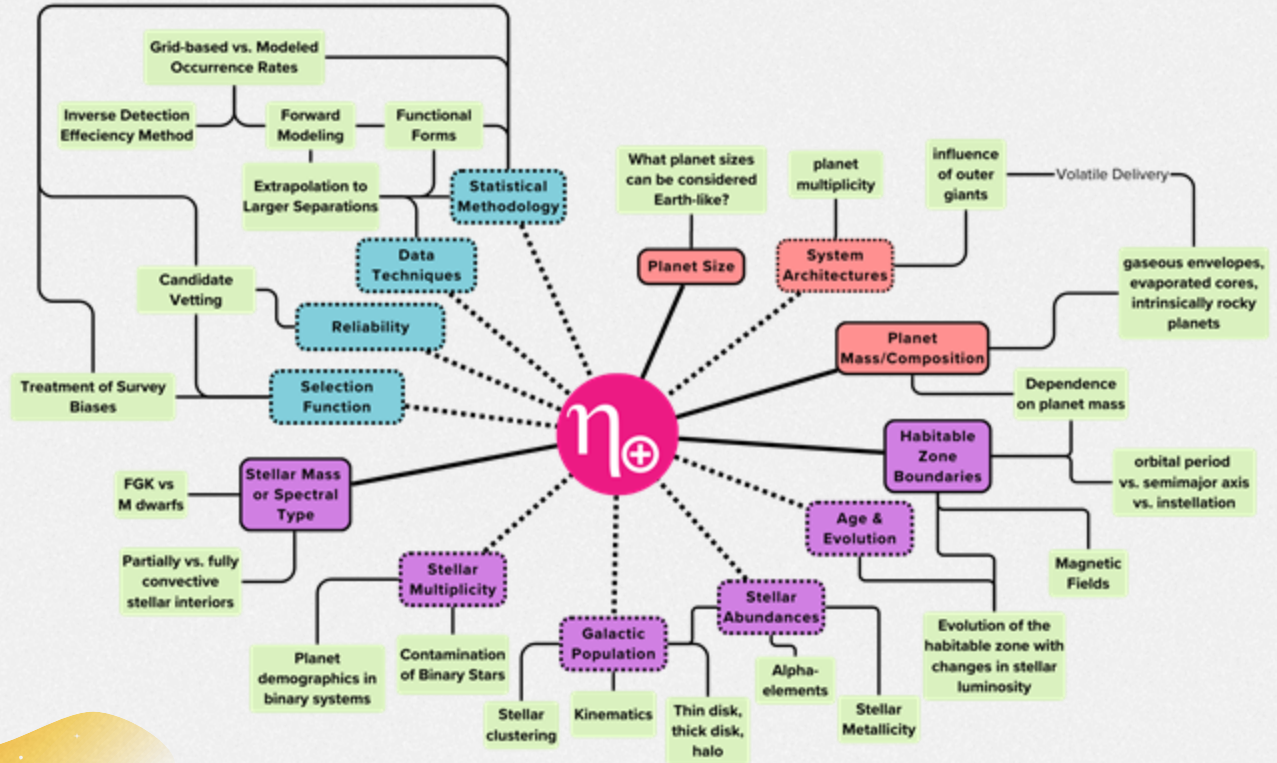


- We are curating a review of past efforts to determine eta-Earth, and have a first order discussion of how different approaches/assumptions can affect eta-Earth and its error bars
- We don't have the scope to duplicate SAG13, but want to shed some light on the problem



# Are We There Yet? Challenges in Quantifying Earth Analogues in the Habitable Zone

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 ROBERT WILSON<sup>20</sup>



# Current Focus: A Review of etaEarth

- First sections dedicated to consolidating definitions and summarizing past efforts to measure frequency of Earth-analogs
  - Identify cause of chronological changes and (attempt) to collate results in an “apples-to-apples” comparison
- Latter sections will identify pathways forward
  - Identify sources of systematics that are not fully accounted for
    - E.g., planet multiplicity, stellar multiplicity, stellar metallicity, etc.
  - Future constraints on eta-Earth from different detection techniques
    - How close are each of the detection techniques (current + upcoming missions) to finding Earth and/or placing constraints on eta-Earth

To be submitted  
May 2025 to AAS  
Journals



# Looking Forward

- White paper highlighting exoplanet demographic opportunities with Roman Space Telescope
- White paper synthesizing exoplanet demographics using multiple detection techniques

**If you are interested in joining SIG#2, email us:**

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