# CMB Probe Mission Study

April 26, 2017

# Overview

- Admin (?)
- Follow-up on action items from last week
- Aperture size guidance for a medium resolution imager (Amy)
- Low resolution approach: imager + spectrometer?
- Drivers for resolution (+bands) from cluster science
  - arXiv:1703.10456 (Cluster Science with CORE)

# Action Items

- Raphael will organize a group of people who will work on a particular target for r
- Lloyd will organize study of delensing
- Lloyd will coordinate the data challenge; Shaul to work on band and noise definitions
    - SH Working on bands
- Shaul will communicate the suggestion of a Foreground workshop to Jamie/Graca
    - Communicated.
- Al will organize a group that will assess the motivation for a super-pixie or develop the case for compspec (complementary spectrometer)
- Shaul will write to Darren Dowell, and Giles Novak regarding galactic magnetic field and galactic dust science; Bill will talk to Aureliene.
    - Sent e-mail to Novak + Dowell; Novak responded

# Aperture Size Guidance

- See Amy's presentation

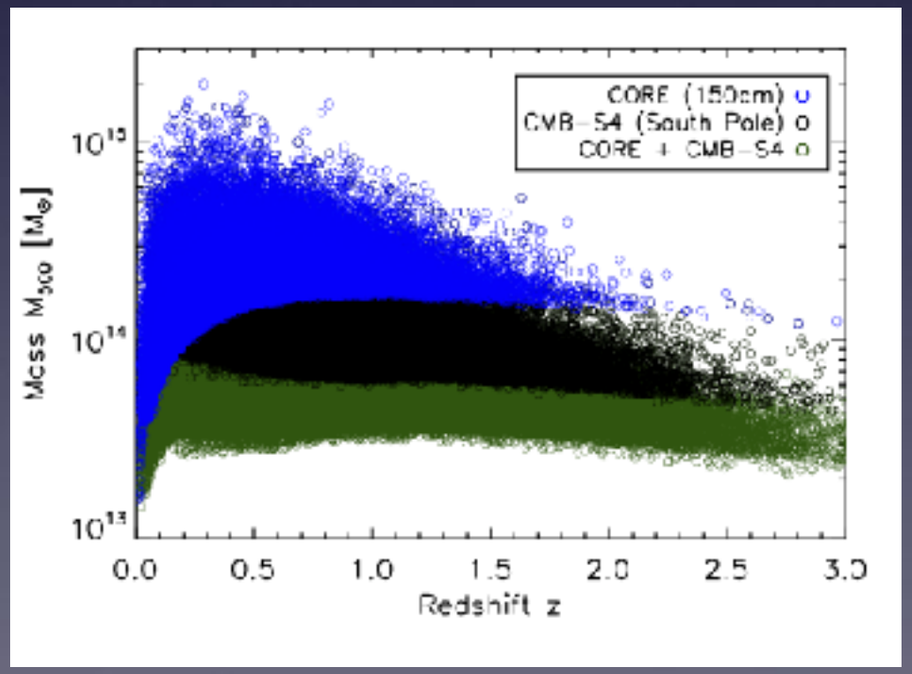
# Low Resolution Approach

- Claim: ‘only low resolution’ should not be ignored, and therefore must be studied.
  - ‘but it fits in lower cost’: does it?
  - even if it does: can we do better?
- Perhaps 2-4 low resolution telescopes (~50 cm, LiteBIRD, EPIC-LC), including a spectrometer
  - Limited self-delensing

# Cluster Science (arXiv:1703.10456)

- Strong complementarity between a space mission and an S4 experiment
- Adapt the calculations for the Probe specifications?

| Experiment | $N_{\rm clus}$ | $N_{\rm clus}/{\rm deg}^2$ | $N_{\rm clus}(z > 1.5)$ |
|---|---|---|---|
| *CORE*-120 | 38,000 | 1.1 | 200 |
| *CORE*-150 | 52,000 | 1.5 | 500 |
| *CORE*-180 | 65,000 | 1.85 | 800 |
| CMB-S4 (Atacama) | 10,700 | 0.47 | 70 |
| CMB-S4 (South Pole) | 71,000 | 6.9 | 5,000 |
| *CORE*-150+CMB-S4 (Atacama) | 56,000 | 2.5 | 850 |
| *CORE*-150+CMB-S4 (South Pole) | 222,000 | 21.5 | 20,000 |




Melin et al. 2017

# Backup Slides