

EXPERIMENTAL ASPECTS

N. Ponthieu, on behalf of WG3

- NP: A few words of context
- LR: comments on PIXIE
- JCH: Argentina

BACKGROUND

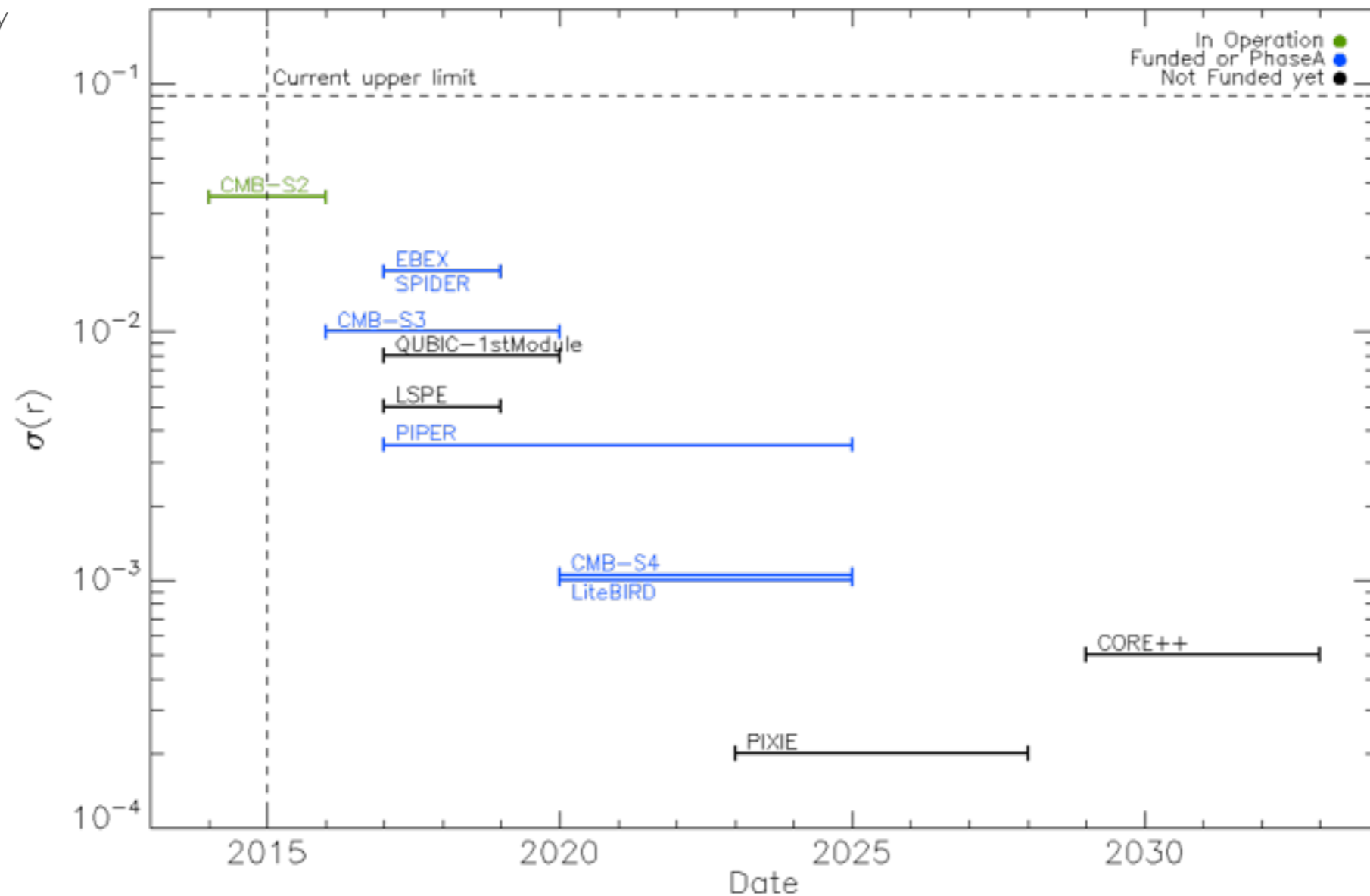
- As recalled by FRB in a PNCG email (Feb. 1st, 2016), the goal of this group is to establish a roadmap on CMB measures, on behalf of the community, by summer 2016.
- On Nov. 26th 2015, we decided to:
 - Organize this series of meetings
 - Share the work as follows:
 - 1. CMB science: what can we learn if $r=0.01$ or $r=0.001$, lensing, synergy with other measures (e.g. Euclid, galaxies...). What about spectral distortions ?
 - 2. Polarized foregrounds: what do we (not) know about them ? How hard to tackle their mapping and spectrum ?
 - **3. Experimental measure: what system for what goal ?** Complementary to the « detector roadmap: what can we target with these detectors ».
 - 4. Ancillary CMB science

STATUS AND INTENTIONS

- Activity just started (one telecon, Jan 25th)
- Proposed strategy for this WG:
 - Review the experimental constraints (sensitivity, fsky, resolution...) set to achieve e.g. $r=0.01$ or $r=0.001$ or spectrum distortion measurements and ancillary science
 - Review what overall systems can be adapted to these constraints or developed in this direction
 - Account for international context to remain realistic
 - Account for earlier prospective efforts

TOWARDS F.O.M.'S (1/2)

- One way to put things in perspective...
- WARNINGS:
 - « **Claimed** » values and found on the web and literature...
 - Consider r only



TOWARDS F. O. M.'S (2/2)

- Integration time vs human and programmatic time
- Ground and balloons easier to assemble than satellites + duration of operations + upgrades and maintainance
- Possibilities of ~few day flights from Kiruna ? Bside+CMB ?

Balloon Noise vs. Ground vs. Satellite

150 GHz	Balloon (Refer.)	Ground-Based Telescope	Satellite	25 Ground-Based Telescopes
2 Weeks	100 ← Reference Noise	500	100	100
1 Year	100	100	20	20
5 Years	60	40	9	9
10 Years	40	30	6	6
280 GHz	Balloon (Refer.)	Ground-Based Telescope	Satellite	25 Ground-Based Telescopes
2 Weeks	100 ← Reference Noise	3000	100	600
1 Year	100	600	20	100
5 Years	60	300	9	50
10 Years	40	200	6	40

2015-11-26/Reflections CMB Counting/Ganga 11

FUTURE WORK AND ORGANIZATION

- This section of the roadmap will deal with the overall experimental context and contingencies but will not be the sole decider on what we should target as far as instruments are concerned.
- Will be articulated with other sections of the white paper (in particular WG2 foregrounds and associated uncertainties that will set strong constraints on instrument designs)
- Lots of efforts already put on thinking about the road to r , not as much effort on the road to spectroscopy yet...
- How do we work collectively on this ?
 - one telecon so far...
 - Dedicated meetings/telecons in between two of the CMBfuture group ?
 - Optical simulations to be encouraged (JPB)

EXPERIMENTAL LANDSCAPE

- Ground
 - US projects: Atacama, South Pole and S4 perspective
 - QUBIC
 - SPTpol-3G, AcvACT, CLASS, PolarBear, Simon's Arrays
 - Quijote - C-BASS, Amiba, GroundBIRD, Mustang 2, Bmachine
- Balloons
 - EBEX, SPIDER, PIPER, LSPE, Before (CHECK STATUS)
 - BSIDE (a.k.a. PlanB) proposing to flight in 2018 and focus on Dust as a CMB foreground to South pole CMB experiments
- Satellites being discussed:
 - LiteBIRD
 - CORE++
 - PIXIE (Al Kogut's visit Jan 28th + see Nabila's and Louis' talks)