

Readout Parallel Session:

Decadal Input Document
Reference Design

2018-03-05

Reference Design Comments

- The goal of the reference design is to demonstrate a feasible, low risk, costed and CATEable, ready to go project, i.e., “shovel ready” and not present just a bunch of options (note, CATE needs good input to do good job)
- The reference design is not the final design (and the Decadal CDR is not the DOE Project CDI or MREFC CDR)
- Choosing between options for inclusion in the reference design is not a down select
- Attractive possible options (those that strengthen our case) will be mentioned in Chapter 4 and in appendix, but not in reference design chapter.
- Options that encourage delaying start, e.g., waiting for new results, are not attractive options
- Where there are equally attractive choices to include in the reference design, we simply pick one
- We need to decide on major components of reference design ASAP
- We also need to identify any important, long-lead design tasks ASAP
- The more detailed the reference design is the better, but we need to be realistic on what we can accomplish.



Charges to Parallel Sessions

Charge for Instrumentation/technology parallel sessions.

The goal is to determine as much of the reference design for CMB-S4 as possible.

- Starting with the major systems or components and work toward the details, i.e., type of detectors, then materials
 - for what parts of the reference design do we have consensus?
 - for which major parts of the reference design are you not able to reach consensus. Why?
 - keeping in mind that the reference design is not the final design, what information is needed so that a decision can be made by end of March?
- What are viable options that may be considered?
(i.e., likely to be viable when critical designs need to be made)
 - Which do we want to mention in the Decadal Survey CDR and why?

Reference Design Proposal

<https://docs.google.com/spreadsheets/d/1vulrDtktoweP96ceIK8INZMWiyhTs9tOvlmepQgTH40/edit#gid=0>

CMB-S4 "Reference Instrument" (for purposes of Decadal input)			Band center in GHz										
WG responsible	Property	Options	20	30	40	85	145	95	145	95	155	220	280

(color indicates dichroic grouping - feel free to change)

DetRO	MUX type	tmux/fmux/mumux/etc											
DetRO	MUX factor	n_bolos per mux channel											
DetRO	Detector type	TES/MKID/etc											
DetRO	Detector temperature	Kelvin											
DetRO	Coupling to free space	lenslets, corr. horn, profile horn, etc											

TES

MKID

Do we require an on-sky CMB experiment to make these decisions?

