

# **CMB-S4 Update**

European CMB Coordinators October 8, 2021

John Corlett – Interim Project Director



## Outline

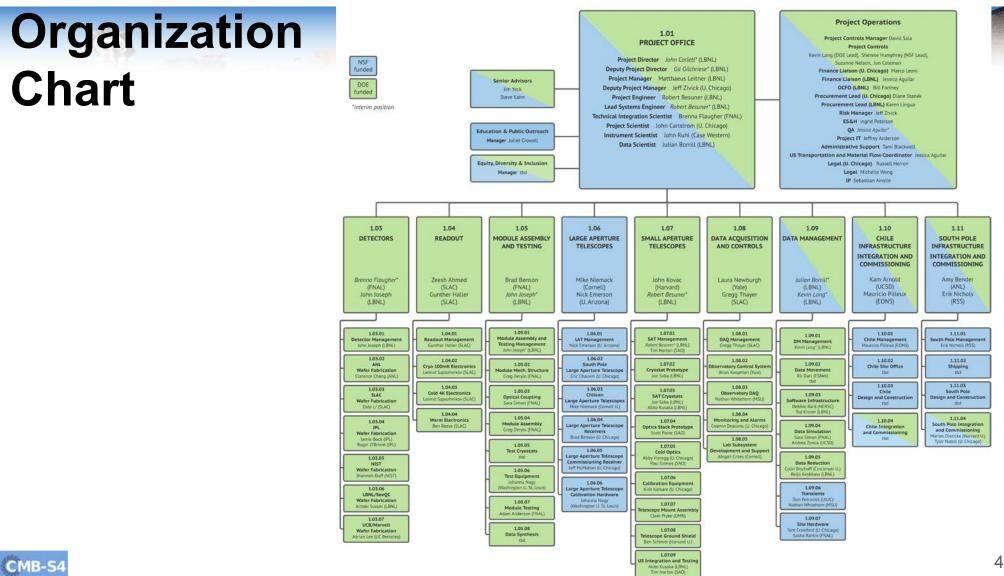
- Project Structure
  - Stakeholders
  - DOE Expectations from the Collaboration
  - Organization Chart
- Project Maturity
  - Preliminary Baseline Design Report
  - Cost & Schedule Development
  - Project Timeline
  - MOUs and LOIs
  - Near-term Reviews
- Conclusions



### **Project Structure**

- CMB-S4 is structured as a joint Department of Energy (DOE) and National Science Foundation (NSF) project
- LBNL was appointed by DOE as the Lead Laboratory, in August 2020
- U. Chicago is the lead institution for the NSF
- The project is organized as a single entity with an Integrated Project Office having DOE, NSF, and participating institutions represented in leadership roles
- The US funding agencies expect all collaborators in CMB-S4 to provide support to the Project
  - Including contributions to the Project from non-US collaborators
    - Financial support, or in-kind contributions
    - Typical for recent projects including DESI, LSST, LZ





#### **Preliminary Baseline Design**

- The Preliminary Baseline Design Report (PBDR) captures the science goals and technical requirements that lead to the scope and design for the experiment
- Required for NSF and DOE Preliminary/Conceptual Design Reviews
- Draft posted May 2021 CMBS4-doc-716
  - 1. Science Case
  - 2. Science and Measurement Requirements
  - 3. Preliminary Baseline Design
  - 4. Science Analysis
  - 5. Project Overview
  - 6. Appendices
- Working with the Science Council and L2s on revisions to improve presentation of the flowdown, and to update the technical design where necessary
- Update to be provided to the LBNL Director's Review committee, November 16-19
- Goal of published version by early CY2022



#### **Cost Estimate in Progress**

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NE Dashboard	Project: CMB-S4 • Last Updated: 6/30/2021 7:23:30 P		2 Project Office - DOE 🕨			Package: DOE-PMO-M Pate: 07/01/2019	57-1000 Project Management Project Office - DOE • End Date: 03/31/2030					
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	29326-Budget 513.4 - LBNL	Sci/Engr - Physicist Staff	PM_3400 Management - CD0103A to FY23 - DOE	04/01/2021 09/3	0/2022 Hours: 3.014.00	\$ 533,056.68	null 🔘 (	0				
	29327-Budget 513.4 - LBNL	Sci/Engr - Physicist Staff	PM_4200 Management - FY23 and beyond - DOE	10/01/2022 11/3	0/2028 Hours: 3,028.00	\$ 626,088.43	null 🔘 (	e (1)				



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#### CMB-S4 Summary Schedule



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1.07 Small Aperture				Eng	ineering l	Design					1										
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1.08 Data Acquisition	Design									Proc	duction										
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MOU: Memorandum of Understanding LOI: Letter of Interest

### **MOUs and LOIs**

- MOUs in place
  - Legal framework for work in Chile. U of Chicago
  - Framework for potential in-kind contributions to CMB-S4
    - Harvard-Smithsonian
    - CCAT Prime Observatory, Inc. and U. Chicago
    - Simons Observatory and U. Chicago
- LOIs (international partners)
  - IN2P3 interest in contributing to Data Management and collaboration analysis working groups
  - Potential framework: existing: iCRADA (international Cooperative Research and Development Agreement with LBNL



#### **Recent and Near-Term Reviews**

- MSRI-1 status review held May 18-19, charged to assess path to Preliminary Design Review for NSF scope
  - "... team is excellent and includes many leaders in this scientific field..."
  - "... team is on a credible path to deliver a draft Preliminary Project Execution Plan and proposal for review..."
- LBNL Director's Status Review
  - November 16-19, 2021
- DOE Project Status review by the Office of Science, Office of Project Assessment
   February 15-19, 2022
- NSF review of the Preliminary Design
  - August 2022 provisional timing, will be initiated by the NSF after ASTRO 2020 report is released
- DOE Critical Decision-1 (CD-1) review "Approve Alternative Selection and Cost Range"
  - August 2022



### Conclusions

- CMB-S4 Project organization and infrastructure is in place and is being used to develop the project maturity, perform R&D, and prepare for phase-gate reviews
- One agency status review is completed, status and and gate reviews are planned for the coming year
- Preparations for agency gate reviews (NSF–PDR, DOE–CD-1) are well under way:
  - R&D in critical areas (detectors, readout, modules and test) is under way to retire risk and reduce cost
  - All major elements have undergone formal technical design reviews
  - Cost and schedule are being updated and will be ready for the LBNL Director's Review in November
  - The Preliminary Baseline Design Report has been drafted and revisions are underway
- The Project is ready to discuss contributions from collaborators, that will enable access to the science data

