

**Meeting Minutes of the
Astronomy and Astrophysics Advisory Committee
24 February 2021**

Members Attending:

John O’Meara (Chair)
Kyle Dawson (Deputy)
Ian Dell’Antonio
Scott Dodelson
Andrew Connolly
Mansi Kasliwal

Stephan Meyer
Petrus Martens
Alexie Leauthaud
Deirdre Shoemaker
Nancy Chanover
Priyamvada Natarajan

Agency personnel:

Ralph Gaume, NST-AST
Renee Adonteng, NSF-AST
James Neff, NSF-AST
Marcus Seigar, NSF-AST
Allison Farrow, NSF-AST
Martin Still, NSF-AST

Paul Hertz, NASA
Keith Warfield, NASA
Kathy Turner, DOE
Tricia Crumley, DOE
Mark Matsumura, OSTP

Others:

Ashlee Wilkins, House Science, Space, and
Technology Committee
Marcia Smith, SpacePolicyOnline.com
Stu Weins, Lockheed Martin Space Systems
Co.
Puja Gupta
Bruno Coriton
Monty Di Biasi

Pamela Green
David Williams
Chris Muscatello
Eric Linder, LBL
Sylvie Espinasse, ESA
Gene Mikulka, C&F

MEETING CONVENED AT 12:00 PM, 24 FEBRUARY 2021

GENERAL

The Chair called the meeting to order. Introductions were made.

Martin Still reviewed the rules, membership, and duties of the AAAC.

The Chair provided an overview of the annual report writing process, noting that the report was notionally due on March 15, 2021. He briefly outlined the main components of the report and suggested that in addition to science highlights, that the report also include recommendations around diversity, equity and inclusion, as well as an overview of the impacts of COVID-19 – including response and mitigation efforts by the Agencies.

The minutes from the September 21-22, 2020 meeting were approved by the Committee.

PROGRAM UPDATES FROM THE AGENCIES

NSF

Ralph Gaume provided an update on NSF activities. It was noted that a major panel review of NOIRLab operations is currently underway. Cleanup activities for Arecibo are progressing well and are expected to be completed before the start of the hurricane season in June. Negotiations are ongoing between NSF and OMB regarding the FY22 budget. It was noted that delays in the budget process are not unusual in the first year of a new administration, however, it is expected that the budget will be released in the Spring. Negotiations with the OMB regarding the 2021 spending plan have now been completed and will be submitted to Congress for approval. Though a closed session may be required, the NSF anticipates that it will be able to provide an update on current plans at the June meeting of the AAAC. Ralph further noted that the spending plan will include continued support for the Facility Operations Transition Pilot, which is expected to be at the \$10 million level.

John O'Meara asked about the order of magnitude estimate of the AST Divisions' total operations outlay for MREFC projects. Ralph Gaume responded that approximately 70% of the budget is for operations and maintenance. He further clarified that the MREFC budget line for facility construction does not come out of the division's budget as the operations does; MREFC is a separate line item and there has been three big MREFC projects in the last ten years. Details on FY2019 actuals can be found in the FY2021 Presidents Budget Request. Actual spending for FY2020 will be available in the FY2022 Presidents Budget Request.

NASA

Paul Hertz provided an update on NASA activities. Notably:

- The Perseverance Rover landed on Mars the previous week. A video of the landing is available. High-definition panoramas of the Jezero Crater are expected to be released later this week. In the next month or two, the rover will begin its journey to the identified high-value science locations where it will be collecting samples.
- The Imaging X-ray Polarimetry Explorer (IXPE) has been completely assembled into an observatory. IXPE is on track for its scheduled launch in November.
- The Double Asteroid Redirection Test (DART) mission is behind schedule. As a result, NASA has waved off the primary launch window this summer and are now instead aiming for the secondary launch window which will overlap with the IXPE launch window. Over the course of the summer there will be a process to de-conflict the two launch dates. Though this may impact whether the launch takes place in November, the team is on track to be ready for a November launch.
- Webb continues its post environmental testing activities, including slight repairs to the sunshield and other items.
- GUSTO is aiming for a flight from Antarctica in December. It is however currently schedule-challenged and has a critical date in April for its environmental tests. If it is late for that test, a decision will need to be made as to whether it can deliver in time to be shipped to Antarctica this year.
- Euclid and XRISM have both encountered issues. Euclid is currently on standby while the European team troubleshoots an issue with Euclid. The Japanese team are on a path to take care of the door leak on XRISM; The US team will need to travel to Japan to work with the team there to reassemble the instrument inside the door, however, there are some challenges with this due to COVID-19.
- ROSES-21 is now out and includes various astrophysics elements related to supporting research and technology, data analysis, mission science, instrumentation and cross-divisional activities.

The FY21 operating plan is pending delivery to Congress for approval. However, this is expected to be completed prior to the June AAAC meeting. No significant changes are anticipated for the Astrophysics appropriation. Expectations are that the FY22 President's budget request will be released in the Spring.

Priyamvada Natarajan inquired whether the Roman Observatory would be included in the FY22 budget. Paul Hertz responded that will not be known until the President's budget request to Congress is released. John O'Meara reminded the committee that the President's budget that comes out right after a transition is often "skinny" on details and its representation of the administration's priorities. Paul Hertz added that the new administration will start from the budget that was developed under guidance during the Trump administration. The guidance under which that work was completed does not however reflect the priorities of the Biden administration, and so, the new administration will need to determine which priorities are included in the first skinny budget, and which will wait.

John O'Meara questioned the potential impact of the expected delay to the Decadal Survey on the FY23 budget process. Paul Hertz responded that a best-guess estimation will be used for FY23 planning based on the top line Decadal guidance. Once the Decadal Survey becomes available, there will be an opportunity to adjust the content within the numbers that were used. However, if there are recommendations that are high priority and compelling but do not fit within the top line, then those recommendations would be used to request an increase to the top line in an overguide or augmentation. Given the delays, it is unclear at this time whether an overguide would be done under a FY23 or FY24 budget formulation process. Congress will have the Decadal Survey at the time of the FY22 budget, so there is a potential for impact in FY22 on that side of the process.

DOE

Kathy Turner provided an update on HEP program activities. DOE continues to partner with NSF on the South Pole Telescope (SPT-3G); HEP supported major upgrade fabrication of the 16,000-detector focal plane. Science goals include dark energy constraints from CMB lensing and galaxy clusters, constraints on neutrinos and other light particles, as well as potential measurement of primordial gravitational waves with BICEP/Keck. The survey began in 2018 and continues to operate smoothly with high observing efficiency. Cumulative map depths for the main 1500-square-degree survey are on track to achieve unprecedented deep levels of 3.0/2.2/8.0 μ K-arcmin at 95/150/220 GHz by the end of 2023. The following science highlights were provided:

- First SPT-3G science publication
- Measurement of TE/EE power spectra with 2018 data set
- Most sensitive measurements made to-date with SPT over the multipole ranges $300 \leq \ell \leq 1400$ for EE and $300 \leq \ell \leq 1700$ for TE
- Maps from 2019+ are already 3-4 times deeper than the 2018 data. Will be used to constrain H_0 and effective number of relativistic species

DESI's 4-month survey validation phase began in December 2020. There have been 1,044 science exposures through mid-February, each with ~5000 spectra. Analysis so far indicates that DESI will achieve TDR in performance and survey depth/parameters.

As part of its partnership with the NSF on the Vera C. Rubin Observatory, DOE is responsible for the Camera fabrication and commissioning. The remaining scope for the camera project is the last two filters (out of six). The Camera is expected to be completed early June 2021. DOE will continue the commissioning with the camera assembly and verification at SLAC. The camera is expected to ship to Chile in February 2022 and be ready for installation on the telescope approximately in July 2022.

The Rubin Observatory will conduct a ten-year deep, wide-field, optical imaging Legacy Survey of Space and Time (LSST) using DOE's LSST Camera and the Simonyi Survey Telescope. DOE and NSF will

provide 50/50 operations support, with DOE primarily responsible for camera maintenance and operations, and the US Data Facility. DOE in partnership with SLAC will carry out all the planned functions for the US Data Facility. The Data Facility is fully integrated into the NOIRLab and SLAC partnership to carry out the Rubin Operations plan and deliver all the data products to all the researchers and collaborations.

Committee Discussions and Preparations for Annual Report Writing

The Committee spent the remaining time discussing preparations for the annual report. The focus was on content, refinement of the language and other formatting requirements. The Committee engaged in discussion on the Sections for inclusion in the report. Members were asked to each add a science highlight, plus any other key points of input to the shared document.

MEETING ADJOURNED AT 2:30PM