Meeting Minutes of the

Astronomy and Astrophysics Advisory Committee

28- 29 September 2021

Members Attending:

Priyamvada Natarajan (Chair)
Kyle Dawson (Vice-Chair)
Wenda Cao
Alexie Leauthaud
Raffaella Margutti
Nikole Lewis
Eliza Kempton
Stephan Meyer
Michael McCarthy
Willie Rockward
Deirdre Shoemaker
Abigail Vieregg
Ann Zabludoff

Agency personnel:

Martin Still, NSF-AST
Allison Farrow, NSF-AST
James Neff, NSF-AST
Neila Odom, NSF-AST
Chris Smith, NSF-AST
Zoran Ninkov, NSF-AST
Elizabeth Pentecost, NSF-AST
Nigel Sharp, NSF-AST
Zoran Ninkov, NSF-AST
Dave Boboltz, NSF-AST
Ed Ajhar, NSF-AST
Glen Langston, NSF-AST
Hans Krimm, NSF-AST
Craig McClure, NSF-AST
Tanner Abraham, NSF-AST
Harshal Gupta, NSF-AST
Alison Peck, NSF-AST
Jonathan Williams, NSF-AST
Matt Viau, NSF-AST
David Morris, NSF-AST
Carrie Black, NSF-AST
John Chapin, NSF-AST
Luke Sollitt, NSF-AST
Chris Davis, NSF-AST
Joseph Pesce, NSF-AST
Ashley VanderLey, NSF-AST
Luca Rizzi, NSF-AST
Andreas Berlind, NSF-AST
Renee Adonteng, NSF-AST
Karen Pearce, NSF-OLPA
William Wester, NSF-PHY
Jean Cottam Allen, NSF-PHY
Randy Phelps, NSF-OIA
Gary Blackwood, NASA
Eric Mamajek, NASA
John Callas, NASA
Charles Beichman, NASA
Kelly Fast, NASA
Jane Rigby, NASA
Nick Siegler, NASA
Dominic Benford, NASA
Jim Lochner, NASA
Paul Hertz, NASA
Hashima Hasan, NASA
Lindley Johnson, NASA
Azita Valinia, NASA
Susan Neff, NASA
Roopesh Ojha, NASA
Lucas Paganini, NASA
Valerie Connaughton, NASA
Patrick Lynch, NASA
Alise Fisher, NASA
Eric Smith, NASA
Julie McEnery, NASA
Jonathan Gardner, NASA
Liz Landau, NASA
John Mather, NASA
Martin Weisskopf, NASA
Kathy Turner, DOE
Yi Pei, OMB
Kartik Sheth, OSTP
Pat Looney, OSTP
Eric Linder, OSTP
Jedidah Isler, OSTP

Others:

Christine Moran, CalTech
Marcia Smith, SpacePolicyOnline.com
Matt Malkan, UCLA
Grant Tremblay, CfA Harvard
Phil Scott, Utah State University
Bonnie Meinke, Ball Aerospace
Rachel O'Connor
Alan Thurgood, Space Dynamics Lab, USU
Adria Schwarber, AIP
Carlos Rodrigues, CMU
Nick Saab, Lewis-Burke Associates LLC
Griffin Reinecke, Lewis-Burke Associates LLC
Hale Stolberg, Lewis-Burke Associates LLC
Michael Ledford, Lewis-Burke Associates LLC
Kate Von Holle, U Chicago
Jan Joris Bruegmann, ESA
Etienne Dauvergne, ESA
Ashlee Wilkins, HSST Committee
Ferrira Almeida
Lewis Groswald, Lockheed Martin
Monty Di Biasi
Michelle Burkett, AURA
Debra Fischer, Yale University
Julie Davis, AAS
Natasha Pinol, AAAS
Alexandra Witze, Nature Magazine
Nancy Natalie
David Millman
Tony Beasley, NRAO
Michael Crair
Mitch Ambrose, AIP
Marcilia Dias
Stephen Clark, Space.com
Jeff Foust, Space.com
Irene Klotz, Space.com

DAY 1; SEPTEMBER 28, 2021

11:00 EDT Welcome and General Remarks

Martin Still provided an overview of FACA requirements for the AAAC members. The presentation covered the definition of a Federal Advisory Council Act (FACA) committee, the charge of the Astronomy and Astrophysics Advisory Committee (AAAC) and the purpose of the meeting.

The committee chair, Priya Natarajan welcomed new members and asked for the approval of minutes from the previous meeting. No objections were heard; the vote to approve minutes was passed. Next meeting dates for January/February 2022 were proposed, discussed, and will be finalized by doodle poll.

11:20 EDT NSF AST Programs and Budget Update – Chris Smith

Chris Smith presented on pending ASTRO2020 report impacts to NSF, NSF operating status and COVID-19 impacts, NSF personnel, scientific highlights, facilities, instrumentation, community outreach, programs, and budgets. See presentation.

Nicole Lewis asked about remote versus in-person review panels and participation demographics. Chris Smith responded that NSF is discussing both topics.

Kyle Dawson asked about budget changes in research, and Arecibo operations. Chris Smith replied that a top-line budget number is received and that AST budgets to that number.

Ann Zabludoff asked about the many DEI initiatives and plans for follow-up and monitoring of final outcomes. Chris Smith replies that AST has its own DEI taskforce which is building an inventory of DEI initiatives.

13:00 EDT NASA/APD Programs and Budget Update – Paul Hertz

Paul Hertz presented a NASA Astrophysics Update; see presentation. Dr. Hertz introduced NASA Science Highlights and NASA has published a science plan which lays out vision, mission, values, and priorities. Paul proceeded to give an update on the James Webb Space Telescope and the Nancy Grace Roman Space Telescope. Dr. Hertz discussed the FY22 budget request compared to one year ago, along with COVID-19 impacts, NASA personnel, R&A research funding, and astrophysics community funding. NASA is committed to improving inclusion and recognizes diversity is necessary to achieve excellence. The presentation concluded with ongoing NASA planning for responding to the ASTRO2020 report.

Michael McCarthy asked how long the Roman prime observing campaign will last. Julie McEnery replied that the campaign will last 5 years.

Priya Natarajan indicated concern over the phasing of Roman Space Telescope integration and the development of any flagship recommended by the ASTRO2020 report, especially regarding technology. Would this mean a flagship will have to be moved to the 2040s? Paul Hertz responded that when the

recommendation is received from the decadal survey, NASA will have to investigate when the right time is to start the next flagship. If stakeholders support NASA in that decision and NASA receives appropriate appropriations in future years, then Paul imagines it will launch in the 2030s, but does not know what flagship and that it is something that will be studied after the decadal survey report is published.

Michael McCarthy asked about the peer review process that Dr. Hertz described. There was apparent success with double blind anonymous review for Hubble Space Telescope time awards, what extent is it practical or possible to extend that to other reviews that are done by NASA? Paul Hertz responded that NASA has been extending dual anonymous processes to other peer reviews for the past year. There are challenges that NASA hasn't worked out over doing dual anonymous for technology reviews, lab-astro reviews, sub-orbital missions, mainly everything done under the Astrophysics Research and Analysis (APRA) Program because one of NASA's evaluation criteria is the ability of the team to carry out the work. NASA will continue to ponder on an effective way to conduct dual anonymous reviews for these specific programs. Dr. Hertz's personal prediction is within 2 years, NASA will be conducting dual anonymous reviews for those programs.

Deirdre Shoemaker asked if NASA has the means (such as data) to evaluate the impact of dual anonymous reviews upon underrepresented groups. Deirdre Shoemaker followed up with a concern that their best intentions can have unintended consequences and there is a need to monitor the situation. Paul Hertz responded by saying NASA has the data, but access to demographics, which is self-reported by proposers is relatively limited. It's a government policy and not something NASA has control over. Every proposer is invited to self-report, and we can certainly look for negative or positive trends among the subset of proposers who self-report their demographic information. Paul Hertz was not sure if self-reported demographic information is a fair sample of demographics. Priya Natarajan mentions maybe there is another creative way this information can be gathered outside of the agency. Dr. Hertz suggested Dr. Natarajan ask OSTP visitors to contribute to this conversation with their suggestions. Priya Natarajan asked, once funded, can this data be collected? Dr. Hertz answered no, NASA cannot collect characteristics concerning race, age, gender, class, etc. Deirdre Shoemaker noted that she thinks institutional knowledge of proposer would be extremely helpful, her worry is that the amount of support is uneven across institutes and could undermine good intentions. Ann Zabludoff suggested explicitly linking the request for self-reporting to assessing the success of programs like dual-anonymous review. Ann also suggested explicitly stating that the information will be kept private and not be linked in any way with the evaluation of individual proposals. These suggestions are to encourage more self-reporting.

15:00 EDT DOE/HEP Programs and Budget Update – Kathy Turner

Kathy Turner detailed planning, budgets, and status for the High Energy Physics program, the Cosmic Frontier program, and DOE research support. See presentation.

Wenda Cao asked if A.I. and machine learning funding is open to all the research community or just for applicants who have co-alignment within HEP's goals? Kathy Turner replied that the Office of Science has funding and HEP has funding; within that HEP is going to look for A.I. machine learning efforts aligned with HEP science goals.

16:25 EDT Visible and Radio Interference – Ashley VanderLey

Ashley VanderLey presented on the status of NSF Electromagnetic Spectrum Management. See presentation.

Priya Natarajan opened the floor to questions. There were none.

16:50 EDT General Discussion

Priya Natarajan encouraged the committee to engage in the equity discussion occurring on the following day. Kartik Sheth asked Priya to discuss more about the Equity Taskforce idea and implementation of recommendations amongst the three agencies. Priya believes the Equity Taskforce should go beyond the decadal survey. She hopes they will investigate what works, what doesn't work, what can be evaluated, and how to test if solutions are working. She hopes the taskforce would work with OSTP and OMB to collect data to course correct if necessary and evolve the charge of a taskforce as it goes forward.

Priya Natarajan adjourned the meeting.

Day 2; September 29, 2021

11:00 EDT OSTP Reflections – Pat Looney

Kartik Sheth introduced himself as the new OSTP contact, especially interested in diversity in ideas and dialogue. Formerly with NRAO, and before then with CalTech.

Pat Looney provided reflections as the outgoing OSTP contact. See presentation. A report concerning a national overview of large facilities will be released very soon and will include research and development infrastructure for science and technology. Dr. Looney reminded the AAAC committee of their opportunity to bring about a powerful vision for the future and indicated concern about the potential interference of microsatellites on ground-based astronomy.

Priya Natarajan asked for Dr. Looney's advice on legally handling equity and inclusion, especially use of dual anonymous proposals and self-reported data. Dr. Looney acknowledges the continued issue, but it will be a legal issue but also one that OSTP can work on in the future. Kyle Dawson asked for advice on who to contact to pursue the issue that was just raised. Pat Looney replied that the current presidential administration is focused on the effort, though noted that it's just getting started. He encouraged committees like this one to stay in touch with the issue. Paul Hertz added that there has been a National Academies study done, with NASA, on collecting data: https://www8.nationalacademies.org/pa/projectview.aspx?key=52322.

NSF's Office of Integrated Activities program officer Randy Phelps noted that, since award proposal demographics are self-reported, many opt out of providing their data. Ann Zabludoff mentioned that participants may worry that the data may be used against them, and it's possibly perceived that it's a statistic-gathering exercise, and Agencies could change that negative bias by adding communication on the integrity of data usage.

NSF's Glen Langston asked about Arecibo Observatory and if OSTP will weigh in on its future? Pat Looney said it's a focused effort with the current administration and they are reviewing what the options are for Puerto Rico.

Pat Looney replied to a question from NSF's Harshal Gupta that topics are received through the Agencies that are doing their due diligence. Agencies make their own budget requests with OMB, not with OSTP.

12:00 EDT Status of The Daniel K. Inouye Solar Telescope - Dave Boboltz

This was a. presentation by Dave Boboltz on the status of the Daniel K. Inouye Solar Telescope. See presentation. COVID-19 commissioning delays were minimized due to the schedule point the project was at when the pandemic arrived, though the largest impact was due to travel restrictions for the instrument teams. There has been resilience, both personal and professional, to keep the project progressing.

Wenda Cao asked about the data policy. Dave Boboltz replied that the policy states that if you are outside of the US community, the guidelines (composed by the AAAC about 5 years ago) are followed to support the US community first before international data users.

Michael McCarthy asked about vaccine policies. Dave Boboltz replied that AURA hasn't mandated vaccines; the voluntary surveys show that the vast majority of employees are vaccinated.

John Callas asked about nighttime stellar capabilities, where Dave Boboltz replied that the programmatic agreement states there are prohibitions during the construction phase.

12:33 EDT Webb Telescope Update – Eric Smith

Eric Smith presented status, and launch and deployment plans, of the James Webb Space Telescope. See presentation.

Nikole Lewis asked about the early release science investigations and the community building activities; on ways to make Cycle 1 more efficient for the community to access the science. Eric Smith replied that the activities were designed to provide analysis tools (referencing the STScI website on JSWT) that will make Cycle 2 data analysis more efficient than Cycle 1 data analysis.

Priya Natarajan asked if the launch date would be rescheduled if weather situations were to impede the launch. Eric replied that they have 13 days of margin at the launch site in Kourou. Launch attendance in person is severely limited due to the space capacity in Kourou, French Guiana, unlike at Cape Canaveral where thousands can attend in person, Kourou is only in the dozens.

Priya Natarajan asked 'How would you categorize the chance of a successful commissioning?' Eric replied that there is confidence in the process based on experience and practice. It is hard to say the exact date on when full commissioning can begin, but the date range is within a period of a week.

Alexandra Witze asked about the petition to rename JWST. Eric replied that the NASA Administrator found no evidence at this time to warrant changing the name of the James Webb Space Telescope.

13:30 EDT **The NN-EXPLORE Program - John Callas**

John Callas (JPL) presented on the status of the joint NASA/NSF NN-EXPLORE Program. See presentation. NN-EXPLORE is a Partnership for Exoplanet Observational Research with component aspects of NN EXPLORE Exoplanet Investigations with Doppler Spectroscopy (NEID), and strategic investigations into Extreme Precision Radial Velocity (EPRV).

Nicole Lewis asked about the plan for bringing new people into the field. John answers that the NEID data will help, and there is a planned data challenge and invitations for researchers to participate. Future plans are to make this a biennial event. The intent is to actively reach out to the research community.

Priya Natarajan asked about synergies with the NEID solar data and DKIST. John Callas hopes to coordinate access to the data that is readily usable by the community.

Jim Neff asked if the NEID solar data is full disk. John Callas said yes, it is.

Priya Natarajan asked if the data will be available to the international community. John Callas said yes, the data is released immediately.

Wenda Cao asks about the quality of the data. John Callas said it is a fiber fed instrument fed into the spectrograph with a resolution of R = 118,000.

Martin Still asked if there are lessons taken from another NASA program regarding Venus detection techniques. John Callas answered that the released HARPS data had an objective is to see Venus near the sun as a test for finding exoplanets near other stars. A deep analysis is needed to improve our ability to detect exoplanets.

14:09 EDT The Imaging X-ray Polarimetry Explorer (IXPE) - Martin Weisskopf

Martin Weisskopf presented on the status and expected science return of NASA's Imaging X-Ray Polarimetry Explorer. See presentation.

Priya Natarajan opened the question-and-answer session asking if the Imaging X-Ray Polarimetry Explorer could help find off-center supermassive black holes? Martin Weisskopf responded that the instrument is not set up to do this.

Priya Natarajan asked what the data release and sharing policies were? Martin Weisskopf responded that all data is shipped to the HEASARC (https://heasarc.gsfc.nasa.gov) and released every 30 days. How much room is available for targets of opportunity? IXPE accommodates several different targets of opportunity. It takes 48 hours to respond to a target of opportunity once a request comes into the science center. A week after observations of the target, the data is at the HEASARC.
Ann Zabludoff asked about the risks perceived with this undertaking and perceived challenges. Martin Weisskopf said the most significant risk is the boom deployment. If the boom does not deploy, the mission is in jeopardy.

15:00 EDT Agency responses to AAAC 2021 Recommendations and Committee Discussion - Priyamvada Natarajan

The Agencies (DOE/HEP, NASA and NSF) responded to AAAC Recommendations in the 2021Annual Report (see presentation) led by Kathy Turner, Paul Hertz, and Chris Smith. The attendees were encouraged to ask questions as the presentation progressed.

Priya Natarajan asked whether private investigators were given the option to request no cost extensions? All Agencies answered yes.

Priya Natarajan said the American Astronomical Society (AAS) and their journals had decided to move to open access, meaning there is going to be an increase in the pay chargers and there has been arrangements made with the funding agencies to take this into account in terms of the budgets. Paul Hertz responded pay charges have always been an allowable charge and we expect PIs to put these into their budgets and request the funding that they need. There is no change from the agency's point of view. Chris Smith responded there is an evaluation of reasonable cost and that definition of reasonable costs scales with the cost of publication. Paul noted that NASA is extending the Astrophysics Data System (ADS) to planetary science and heliophysics starting in the next year.

Ann Zabludoff asked what the opportunities are for NASA, NSF, and DOE to talk amongst themselves independent of the AAAC forum? Do you have standing meetings where you coordinate these initiatives? Paul responded that most meetings are initiated at a project level but said, regarding policies, they do not have standing meetings. Chris Smith said they do have formal structures at the program level, such as the Joint Oversight Group for Rubin and topics like this come up and are discussed between the agencies. When there are opportunities or questions then agencies will get together to discuss for example the AAS issue. Priya Natarajan said hopefully in the future the three agencies will be able to coordinate the astrophysics portions of their respective agency initiatives in some fashion.

Ann Zabludoff said several Agencies have said they don't have enough data or investigations don't show that there is bias within award selections; can those two statements be reconciled? Also, can it be reconciled that NASA in many respects seems very far ahead in this process of trying to establish best review practices such as dual anonymous review? Even if the data doesn't yet exist, it's necessary for the data to be acquired. There are examples demonstrating that bias exists everywhere, especially when facility resources are limited. It seems like there's been an established proof of concept through NASA's initiatives and the roadblocks are technical ones. Ann would love to see a road map towards overcoming them. Paul Hertz made it clear that NASA never claimed that they have data to shows that their reviews were bias, they've done dual anonymous because it eliminates the appearance of potential bias. Priya Natarajan said the kinds of metrics that are easily available given the differences in the funding models require further thinking of how you could get the data they are after. The key reference is that the funding models, collaborations, and project-based funding methods are different between the agencies.

Abigail Vieregg made a comment that Chris and Kathy indicated they found no significant evidence of peer review bias and was wondering what that meant, bias against whom, and how do you measure that? Chris Smith replies suggesting that that question might require a presentation rather than a single sentence response.

16:06 EDT Committee Discussion

Priya Natarajan, supported by Kyle Dawson, mentioned that one of the activities that the AAAC is interested in is creating a DEI taskforce or subcommittee. She has been informed that a formal recommendation can be made to the agencies to formulate a set of key questions that a subcommittee would address, then incorporate into a charter, and there could be a process to invite people to be a part of the subcommittee. The goal would be to leverage the expertise of people beyond those who are in this committee; e.g. equity, demographic data collection, and the efficiency of the various kinds of tools and initiatives.

Nancy Chanover wondered to the Agencies to what extent each them felt they were bound by higher levels at your agencies, and whether an even more coordinated effort to tackle DEI issues wouldn't be as constructive as the Committee would like it to be because of policies that are made at a higher level? Paul Hertz commented saying that there are a lot of activities going on at the federal government level, and science mission level at NASA, etc. He was unsure what a AAAC taskforce would bring to the panoply that isn't already there. Chris Smith said discussions with OMB on this topic are at the NSF level, not the AST level. AST implements Foundation-wide policies; carefully-developed recommendations can be implemented and are useful to be carried into conversations from the division to Agency management. Kathy Turner said DOE/HEP is under the same constraints as the other Agencies.

Priya Natarajan commented that a focused group could consolidate what is being learned. Offline, the Committee can put together some questions. Nancy Chanover suggested that this proposed task force would help give voice to how important these issues are for the field, across the three agencies and was keen to understand whether the agencies could identify strategies that could be taken to make sure that a task force would be maximally effective.

Ann Zabludoff was interested in hearing what the plans are to fund non-dark energy science from LSST beyond the building and initial operating of the telescope? Chris Smith responded by saying we want the astronomy grant program to have a healthy level to be able to support our flagship instrument and flagship projects. Right now, there are no plans to issue a special call for Rubin science explicitly, but we fully expect that the proposals coming in using the results of our latest flagship instrument will fare well in the AAG evaluation process. Priya Natarajan asked whether AST would be interest in growing the budget for AAG. Chris Smith answered yes.

Priya Natarajan asked whether there had been discussions concerning funding for AI, machine learning, and computer science big data projects? Chris Smith answered yes.

Wenda Cao asked whether AST has coordinated a program with NASA to perform a campaign for DKIST operations? Carrie Black answered that AST is working on coordination with NASA, but still allows DKIST to be a stand-alone entity. Wenda C. asks what about with other agencies? Carrie Black has not come across those conversations yet.

Priya Natarajan gave special thanks to all AAAC members, new members, Agencies, and speakers.

1633 EDT Meeting Adjourned