Minutes of the Meeting of the Astronomy and Astrophysics Advisory Committee Teleconference

22-23 February 2011
National Science Foundation, Arlington, VA

Members attending:

Sarah Church
Debra Elmegreen
Joshua Frieman
Kim Griest, Chair
Martha Haynes
Jackie Hewitt
David Koo
Greg Laughlin
Douglas Richstone
Paul Vanden Bout
John Wefel
Charles "Chick" Woodward

Agency personnel:

James Ulvestad, NSF-AST
Thomas Statler, NSF-AST
Elizabeth Pentecost, NSF-AST
Craig Foltz, NSF-AST
Vernon Pankonin, NSF-AST
Nigel Sharp, NSF-AST
Donald Terndrup, NSF-AST
Jeffrey Pier, NSF-AST
Richard Barvainis, NSF-AST
Ed Ajhar, NSF-AST
Vladimir Papitashvili, NSF-OPP
Jean René Roy – NSF-LFO
William Miller, NSF-LFO
James Whitmore, NSF-PHY
Joseph Dehmer, NSF-PHY
Jon Morse, NASA
Rita Sambruna, NASA
Hashima Hasan, NASA
Richard Griffins, NASA
Ilana Harrus, NASA
Stephen Merkowitz, NASA
Thierry Lanz, NASA
Trent Perrotto, NASA
Glen Crawford, DOE
Kathy Turner, DOE
Michael Salamon, DOE
Fred Borcherding, DOE
Sae Woo Nam OSTP

Others:

Virginia Neale, Caltech
Andrew Rein, Villanova
Kevin Kelly, Villanova
Evan Armstrong, Villanova
Rob Edgerton, Villanova
James Murday, USC
Michael Devirian, JPL
Bethany Johns, AAS
Daniel Lester, UT Austin
Randall Correll, Ball Aerospace

MEETING CONVENED 9:00 AM EST, 22 February 2011

The Chair called the meeting to order, and all participants identified themselves.

The minutes from the 7-8 October meeting were approved by the Committee.

Elizabeth Pentecost, the AAAC Recording Secretary, reviewed the list of identified Conflicts of Interest (COIs) for the AAAC. There were several updates to the list provided. Those updates will be recorded and distributed before the May 2011 meeting.

Glen Crawford provided an update on DOE programs and budgets. The major elements of the DOE's plans are to exploit the capabilities of the Tevatron and LHC at the Energy Frontier, implement a world-class Intensity Frontier program at Fermilab, address compelling high-impact scientific opportunities at the Cosmic Frontier, and develop accelerator technologies needed by the Nation and for a U.S. leadership role in particle physics. The FY2012 request for HEP is a 0.8% increase over the FY2010 budget. DOE is making investments in its programs even with relatively flat budgets. It is a balanced program of projects in all three frontiers. The U.S. LHC program is supported at a level that will allow researchers to play a leading role in extracting physics from the data obtained and in planned upgrades to the detectors. The research program is supported at a level that will help maintain a productive workforce. Advanced technology R&D is continuing to support high risk, high impact initiatives as well as developing and maintaining core competencies important for the U.S. Exploring the "dark" sector (dark matter and dark energy) of the universe is one of the scientific challenges for HEP. The FY2012 President's request does not include running the Tevatron beyond 2011 even though the HEPAP recommended a three year extension if funds could be secured.

The FY2012 request included $15M to maintain the viability of DUSEL. In December, the NSF's National Science Board (NSB) decided not to proceed with DUSEL at this time. The DOE is now assessing options to carry out planned research in a cost effective way, including alternatives for the location of individual experiments such as the Long Baseline Neutrino experiment (LBNE).

Woodward asked whether DOE and NSF planned to go back to the NSB in the future. Crawford replied that he could not speak for NSF but DOE planned to identify options for LBNE, dark matter, and double beta decay experiments and welcomes NSF's participation. If they wish to participate in a new version of DUSEL, that will be appreciated. It is not outside the realm of possibility that NSF would come back with what they plan to do with DUSEL. DOE's goal is to make plans for what they will do with LBNE, dark matter, and double beta decay experiments with the understanding that DOE may have to take on everything.

The Astro2010 recommendations for DOE are part of a coordinated ground/space-based dark energy program that includes LSST and WFIRST. LSST was recommended as the priority because DOE's role is critical.

DOE is funding several joint dark energyprograms with NSF that include BOSS and DES (Dark Energy Survey-camera). Any involvement in WFIRST would be with NASA. DOE is supporting several persons on the WFIRST Science Definition team. DOE has collaborations with NSF for Veritas, Auger, and HAWC. DOE partnered with NASA on the large area telecope for the Fermi Gamma-ray Space Telescope an now hosts the LAT instrument science operations center at SLAC.

Elmegreen asked where the Astro2010 recommendation on computation networks fits into DOE's plans. Turner replied that there is no separate funding line for computation networks but is folded into the research program. DOE already has a healthy program in theory and simulations. DOE is following the advice from PASAG and trying to fold in the Astro2010 recommendations into their programs. Direct direction of dark matter is the highest priority, followed by dark energy.

James Ulvestad provided an update on NSF programs and budgets. He presented several science highlights and facilities updates including ALMA, EVLA, ATST, VAO, and LSST. The new facilities coming on-line will need the research from the grants program so there is an attempt to keep a healthy grants program. LSST is moving toward Preliminary Design Review which sets

the project scope and estimated cost. There is an interagency NSF-DOE joint oversight working group and they are meeting to discuss the project. NSF's MPS Advisory Committee recommended LSST for PDR and AST is awaiting the NSF Director's approval to arrange the PDR. The LSST will need a robust operations and cost plan in order to get into the MREFC budget line. Nigel Sharp is the Program Officer for LSST. Other joint projects include DECam, a dark energy camera built by DOE to be mounted on the Blanco telescope in Chile, a potential BOSS follow-on (to be mounted on the Mayall telescope but no commitment from NSF or DOE), theory and computation networks which are being discussed among the agencies, and ACTA, which at this time has no near-term funding source.

Joseph Dehmer (NSF-PHY) reported that the NSB decided not to approve a budget wedge to keep DUSEL alive. The project is completing a preliminary design report that was part of the original award. The decision based on the interagency joint stewardship model was unacceptable. NSF was going to provide a lot of infrastructure and the NSB thought that NSF was doing most of the infrastructure for DOE science and they said no. DOE will be assessing how much they can carry. The FY2012 request, has funding for DUSEL at $0. Resources are being reallocated to support underground science where ever it may be. There is an NRC study on physics and multidisciplinary programs underway and the report will be provided later in the year.

The Chair asked whether Dehmer thought the NSB would look at DUSEL in the future. Dehmer replied that the NSB is willing in the future to entertain a new approach but with no funding commitment.

Ulvestad discussed the budget in the overall NSF context. The MPS budget reflects NSF priorities, such as investment in research addressing national priorities (SEES, CIF21), a strong scientific workforce (CAREER, postdocs, REU, GRF), support for multidisciplinary research (institutes, Centers, networks), and investment in facilities critical to fundamental research. The MPS FY2012 budget is a 6.0% increase over the enacted FY2010 budget. AST's FY2012 budget request is, however, only 1.4% over the FY2010 enacted budget. Astronomy does not easily map onto the Administration's science priorities, when compared to disciplines such as biological sciences, earth science, and engineering. Astro2010 plans call for continuing the LSST D&D funding, moving toward PDR and an MREFC start in 2014. There is no funding wedge available for a mid-scale innovations program and no GSMT commitment in the FY12 request. Also, there is no current budget envelope for initiating the recommended "small" increases except to protect the grants and ATI programs near current levels. AST is pursuing Gemini governance and optical-IR issues. The Division is aiming for a portfolio review within the next year. The portfolio review would be aimed at an assessment of the strategic balance of all programs within the division. An AST working group is currently assessing the exact charge and mechanism for the review.

The Chair asked if there was anything the AAAC could do to help. Ulvestad responded that the community needs to close ranks behind the decadal survey. We are not going to be able to do everything. There will be people who want their program done over someone else's program; if the community fractures, it puts us in a worse position. There was a reason LSST was a top priority. It has huge data handling opportunities and education opportunities. We need to highlight those opportunities and to realize them, build the telescope, and fund operations robustly.

Jon Morse provided an update on NASA programs and budgets. He presented several science highlights including discoveries with HST, Kepler, and Fermi. The number of missions flying

and taking data have decreased. The next launch will be NuSTAR. The LISA Pathfinder mission is scheduled for 2013. The suborbital program is quite active. The balloon sites are being recertified as a result of an incident in Australia last year. NASA received the next round of Explorer proposals, 22 missions total. There is a lot of demand for the Explorer program. Future AOs will depend on NASA's response to Astro2010. SOFIA completed its science flight series and a second generation instrument AO will be released in late 2011. There were two balloon flights in December 2010, CREAM VI and BLAST. A superpressure balloon was launched in January 2011 and flew for 22 days.

NASA has reorganized the JWST effort as a result of the Casani report. NASA HQ and GSFC are in the middle of their re-planning. There will be a rebaselining of the project to be completed in late 2011; an expectation that it will be part of the FY2013 budget request.

The call for the Science Definition Team (SDT) for WFIRST received 82 nominations. The SDT members were selected and hah a kick-off meeting in January 2011. The team is to look at all of the science aspects in defining the requirements for the observatory. A preliminary report is due in summer 2011; they are to wrap up their activities in 2012 with a definition of a design reference mission.

The SMD budget in the out years are notional estimates. The Astrophysics budget will look different because JWST has been pulled out and is managed by SMD separately. Expenses for all civil servants who work in SMD will now be in a single account instead of being spread out to every single project. Budget for Astrophysics is around $690M. Astrophysics is responding to the decadal survey recommendation with augmentations to the Explorer program, the balloon program, the astrophysics research program, and technology development, but it defers initiating the next large mission beyond JWST. There is insufficient budget to develop two large missions at the same time and retain a balanced portfolio. WFIRST has some concept development and technology funding but Astrophysics does not have a long term budget identified for WFIRST in this budget request. There are reduced resources and the Division will rely on the use of the senior review recommendations to prioritize funding for missions in extended operations.

Astro2010's science themes are well aligned to those of the Astrophysics program even though there is no optimistic budget to go with the program. NASA is exploring a potential partnership with ESA on a proposed Euclid dark energy mission. NASA is augmenting investments in core research and technology programs, including the suborbital program, theory, laboratory astrophysics. A future astrophysics Explorer missions budget was created to increase the flight rate to achieve the recommended four missions and four missions of opportunity selected by the end of the decade.

NASA is working with the NRC and other agencies to establish an appropriate advisory structure that is compatible with Astro2010. NASA needs to think about the long-term implication of international coordination and cooperation. Astrophysics is thinking about a possible conference in 2012 with community involvement with a goal that when it gets to the mid-decade review, there would be a lot of input.

Elmegreen complimented Morse on addressing each of the items of the decadal survey even though the budget is disappointing.

Richstone asked Morse about whether the Technology Fellowships would be tenurable at the universities. Morse replied that they are still working out the details. It could involve postdocs and early career faculty who would go to an institution; would have to be a mentor and a

commitment of resources to support the research. It's a little more difficult because it involves the use of lab areas. It could be rolled over to early faculty but they are still working the finer aspects of the request.

Hewitt asked how the rebaselining of JWST would affect the astrophysics budget. Morse replied he did not know and did not care to speculate at this time. However, most people ask the question, "Is this going to insulate Astrophysics from any more changes in JWST? His answer is probably not. It is difficult to conceive that there will not be any further effect on the budget.

Vanden Bout asked what is the agency's strategy regarding young people in light of the gloom and doom surrounding budgets for Astro2010; in declining budgets, one cannot afford to keep what we have. Morse replied that NASA definitely supports young people. The strategy does support the kind of immersive experience for young people across areas such as theory and suborbital, with hands-on experience; infusing young people in science, engineering, and math, creating the future; and making the Explorer selections and increasing flight rate to build back up the portfolio. As a community, we need to reassess the mind set that we keep all experiments running and satellites launched going indefinitely. We need to let things go in order to enable the future. That is what this budget is centered around, enabling the future.

Richstone asked whether there is still a role for the AAAC. Morse replied it depends on what the agencies need advice on. There is a need for community input on a regular basis; there is a longer turn-around time for NRC reports. The AAAC is chartered to provide advice on joint programs. The AAAC has made excellent contributions to the agencies in their planning processes, especially with the task forces.

Morse suggested that the WFIRST Science Definition Team (SDT) provide a presentation on its activities to the Committee at the next meeting.

Managing expectations is important. If there is little money to implement the recommendations of the decadal survey, then the community needs to understand that. The agencies are on board with the survey priorities even though there may not be enough money to do all of the projects in the survey. NSF is fully on-board with the recommendations on GSMT and is looking at several scenarios that would enable them move forward. There is a joint oversight group between NSF and DOE that is focused on aligning their separate processes for LSST.

Sae Woo Nam, the new senior policy advisor at OSTP, on detail from NIST, introduced himself to the Committee.

The Chair commented that astronomy is not well aligned with the Administrations science priorities. He asked if there was anything that the community could do to help with that. Sae Woo replied that OSTP is appreciative of all of the inputs from the community including the decadal survey. It's a very tough budget time. It is very difficult to prioritize in this budget climate.

Griest commented that it looked like we were losing US leadership in this field. Sae Woo replied that the community needs to continue to do what it is doing. Elmegreen commented that even though astronomy does not align with the six major priorities, it does align with the cross-cutting areas.

The Committee discussed the possible contents of the report. The Chair suggested emphasizing current science discoveries as evidence of past success of the decadal process. The report should

also include the decadal process and how the agencies responded to the survey. The Committee should commend the agencies for their responses to the Astro2010, indicating they have done good things but noting that it will be hard to complete with less budget. The report should include an assessment of agency cooperation.

Richstone asked the Committee what they thought about having this meeting by teleconference. The members indicated they found it difficult to have the meeting via telecon. It was not the same as meeting face-to-face and discussing some of the same issues.

The Committee made writing assignments to be discussed the next day. Statler suggested the Committee have a detailed table of contents and a list of the key points that must be addressed along with detailed writing assignments, with a goal of having a detailed product before the Committee starts editing.

MEETING ADJOURNED AT 5:00 PM EST, 22 FEBRUARY 2011
MEETING RECONVENED AT 9:00 AM EST, 23 FEBRUARY 2011

The Chair called the meeting to order. He had provided a draft table of contents to the Committee the previous night on the points that needed to be included in the annual report. Some of the Committee members provided write-ups that were discussed and the Chair completed writing assignments.

MEETING ADJOURNED AT 11:00 AM EST, 23 FEBRUARY 2011