Minutes of the Meeting of the
Astronomy and Astrophysics Advisory Committee

9 May 2008
National Science Foundation, Arlington, VA

Members attending:	Garth Illingworth (Chair)	E. Sterl Phinney
	Scott Dodelson*	Marcia Rieke
	Wendy Freedman*	Keivan Stassun
	Katherine Freese	Christopher Stubbs
	Rocky Kolb	Alycia Weinberger
	Daniel Lester	

Agency personnel:	Craig Foltz, NSF-AST	Dennis Kovar, DOE
	Eileen Friel, NSF-AST	Gene Henry, DOE
	Dana Lehr, NSF-AST	Jon Morse, NASA HQ
	Elizabeth Pentecost, NSF-AST	Michael Salamon, NASA HQ
	Philip Puxley, NSF-AST	Wilton Sanders, NASA HQ
	Vernon Pankonin, NSF-AST	Zlatan Tsvetanov, NASA HQ
	Julian Christou, NSF-AST	Vladimir Papitashvili, NSF-OPP
	Kathleen Turner, DOE	Emily Woodruff, NSF-OIG

Invited participants:	Joel Parriott, OMB	John Henry Scott, OSTP
	Jean Cottam, OSTP	Jonathan Lunine, U. Arizona

Other participants:	Jay Frogel, AURA	Ron Allen, STSci/JHU
	Adrian Cho, Science Magazine	Shri Kulkarni, Caltech
	Jennifer Wiseman, NASA-GSFC	Neill Reid, STSci
	Randall Correll, Ball Aerospace	David Lang, NRC
	Michael Deviman, NASA-JPL	Roeland Van der Marel, STSci
	Stephen Unwin, NASA-JPL	John Gantt, Mizrack & Gantt

*****Participated by telephone

MEETING CONVENED AT 1:00 PM EDT, 9 MAY 2008

The AAAC meeting was conducted in part by teleconference. Committee members Wendy Freedman and Scott Dodelson, participated by telephone.

The Chair called the meeting to order. Dana Lehr reviewed the list of identified Conflicts of Interest (COIs) for the Astronomy and Astrophysics Advisory Committee (AAAC) and updated the list for each member. The list will be updated and distributed at the start of each meeting.

The Chair discussed briefly the agenda for the meeting.

The first session of the meeting was a discussion with Joel Parriott, the Office of Management and Budget (OMB) examiner for the National Science Foundation. He had been spending more of his time

focused on the Major Research and Equipment and Facility Construction (MREFC) process and the projects that are part of that account. He noted that with the 2009 request, it was clear that the NSF Director was a strong advocate of shifting NSF to a more proactive oversight culture in contrast to just "shipping money over the fence and crossing your fingers." For astronomy and astrophysics, the Advanced Technology Solar Telescope (ATST) will be a test case for changing how design and development (D&D) is being handled in a different "color of money."

The Chair asked for questions from the Committee.

Wendy Freedman asked Parriott to say a little more about MREFC, particularly in regard to ATST as a "test case." Parriott replied that there are two topics on ATST. First was just the MREFC process; ATST is a test case for funding parts of the project other than construction in the MREFC account. The National Science Board agreed that this was a good way to go, but OMB and the National Science Foundation (NSF) will have to see if appropriators will sign off on that. Second was ATST as a project. Parriott felt that NSF needed guidance from the community since the budget had increased by a factor of 8 since the last decadal survey was released. It jumped from a moderate-sized NSF project to a major NSF project. He wanted to know if ATST was going to be under consideration in the upcoming Decadal Survey. He also spoke about pending issues with environmental compliance and with the Native Hawaiian population—we know the budget for the project plus an unknown amount for these issues and accompanying delays.

The Chair identified the attempt to request D&D funds for ATST in MREFC as a potentially positive move toward responding to the recommendations from the AAAC with regard to lifecycle costs. Parriott noted that the appropriators do not seem antagonistic to this idea, but they want to know more. Parriott was interested in identifying the process to engage the community again in the process as projects change.

Lester recalled Parriott saying that NSF senior management on projects should be a lot more like the Department of Energy (DOE). Lester asked "what specific changes would you like to see made that work at DOE? Parriott replied that there are a lot of things that do not work at DOE. Should we spend more money on projects up front so we know what we're getting into." The Chair noted substantial contingencies at DOE; "Are you thinking about that?" Parriott replied Yes, but we do not need contingencies that allow zero tolerance on cost overruns; plus or minus 10% is the generally acceptable tolerance level on cost and schedule; things do go wrong. If you try to create a large enough contingency so there was never a cost overrun, then you might price yourself out of projects. As long as the contingency was a careful bottoms-up contingency and not a number out of the air, then OMB was supportive of it.

The Chair encouraged agencies to cooperate on their experience in doing large projects.

John Henry Scott from the Office of Science and Technology (OSTP), indicated that at the upcoming June 2008 National Science and Technology Council (NSTC) meeting, there will be a plan to get agencies together in a friendly forum to discuss issues on large-scale science. The Chair noted that this was a very good idea.

The Chair asked for Parriott's sense of how things are evolving in the budget process this year. He asked what was meant by the announcement from OMB about budgets? Parriott replied that he had a sense from the community that they thought this was something unusual; transitions are always unusual, but the announcement for FY10 is no different from previous transitions in the administration to allow the budget to be developed at the policy level under the new administration. OMB will be very busy in the January through April timeframe.

The Chair asked "Will the agencies be doing any work on budgets before the usual September submissions this year?" Parriott replied that NSF was a little different because they are not buried in a cabinet agency, so they have a little more control over their destiny. NSF was currently having retreats at the Foundation in a normal budget year to discuss internal priorities. In a normal year they would have to wrap up that activity by Labor Day, but now those can take more time through the fall. All you should be hearing was that OMB does not want anything in September this year, but agencies can do their usual planning throughout the year.

The Chair asked about the AST Senior Review. He was seeing Congressional interests in some of the projects that were identified for reduced investment. "Do you see a way to strengthen the impact of those recommendations?" Parriott replied that OMB had not second guessed the Senior Review recommendations or what NSF was doing to respond to them. Everyone acknowledged that you need to shut down something to do something new, but the politics can make that impossible. As far as strengthening the recommendation, the only suggestion he would make would be to involve the National Research Council (NRC) since it can be difficult to ignore recommendations from the Academy. He recognized the expense and longer timescale of that process. He did not have great insights into how to address the issue of earmarking. It was frustrating when you saw an agency behaving responsibly but then being unable to implement their planning.

The Chair thanked Parriott for his comments and discussion with the group.

The Chair asked OSTP for their comments. Scott noted the question about what the agencies could do now for their budget-building process, having noted that some agencies (e.g. DOD) were accelerating their processes. Many agencies are not looking at this as a break; instead, rather a chance to think carefully about what one would do in certain situations. Budget planning was continuing.

Craig Foltz gave an update on the NSF Division of Astronomical Sciences (AST) activities. He noted the changes that had taken place in the AST management—Wayne Van Citters moved to the Mathematical and Physical Sciences (MPS) Directorate office as a senior advisor for facilities planning and management; Foltz assumed the position of Acting Division Director; applications opened for a new Division Director on May 2 and will close on June 28; and, a "beat the bushes" committee had been constituted with John Huchra as chair.

Foltz reported that the triennial review of AST's processes and planning had taken place in early February. The Committee of Visitors (COV), co-chaired by John Carlstrom and Bruce Margon, made a number of observations and conclusions: AST was doing a good job and continues to aggressively implement the community's goals while coping with fiscal realities; the COV supported the Senior Review recommendations and the progress on its implementation; the proposal evaluation process had been handled thoroughly, carefully, and professionally. The COV made several recommendations in their report, the major ones being that there were no suggestions for fundamental changes in the direction AST was taking in procedures and planning. Other recommendations included additional staff were needed, lack of travel was having an impact on AST's ability to exercise oversight and maintain contact with the community, and there was a consideration to move Electromagnetic Spectrum Management (ESM) to the MPS office or higher to raise visibility and commitment to the global community.

Foltz reported that in the current FY2008 plan, AST was up by 1.15% or $2.47M, however, all the facilities were held flat with the exception of $2M to the National Radio Astronomy Observatory (NRAO) for Atacama Large Millimeter Array (ALMA) operations. Because of the flat budget, AST would not be able to implement some of the senior recommendations such as infrastructure improvements for the National Optical Astronomy Observatory (NOAO), the National Solar Observatory (NSO), and the University Radio Observatories (UROs). Increases in research and instrumentation career

development grants programs, the TSIP, and AODP programs will not happen. New programs to support instrumentation career development would not happen. Language in the appropriations bill states that AST facilities must be funded at the 2008 request level which would require an increase of ~$6M for the facilities, without providing the necessary funding. This would impact other parts of the program if not changed in the operating plan. The 2008 current plan had still not been approved as of this meeting.

Foltz reported that the 2009 request for AST had an increase of 14.8% ($32.15M) for a budget of $250.01M. There was new MREFC language from the National Science Board (NSB) that had moved $2.5M for Design and Development (D&D) for ATST to the MREFC account. The long term impact of losing these funds was not known. The challenge will be to handle the ALMA operations ramp, which will translate into an increase of ~$9M.

Foltz reported that the 2010 budget will be prepared by the new administration. Interactions with the transition team will begin in the late fall. A budget call was expected in January 2009.

The Chair asked about the status of the Decadal Survey study. Foltz reported that the NSF, NASA, and DOE jointly reviewed the proposal for the next decadal survey. Several meetings and exchanges over the past months addressed the comments of the proposal reviewers and agency concerns. A statement of tasks was finalized in April and an award was underway with all of the agencies having initiated funding actions.

The Chair asked about the status of ATST and the Large Synoptic Survey Telescope (LSST). The final Environmental Impact Statement (EIS) for ATST was expected soon. Consultations under the National Historic Preservation Act (NEPA) are ongoing. The result will be a Memorandum of Understanding (MOU) signed by the consulting parties. Consultation with the Park Service and the Federal Aviation Administration (FAA) are continuing as well. There were additional costs for historical and cultural mitigation that were not part of the original estimate to completion. Foltz noted that cost growth in ATST had been a factor of 3 (not 8 as reported by Parriott). D&D funding for the Large Synoptic Survey Telescope (LSST) continued from AST. The Conceptual Design Review was held in September 2007; it was a very positive review and the process will continue. A decision to construct the telescope will probably not be made until after the Decadal Survey report is released. D&D funding for the Giant Segmented Mirror Telescope (GSMT) will continue with AST funding both the Thirty-Meter Telescope (TMT) and the Giant Magellan Telescope (GMT). Dialog with both TMT and GMT continued.

Dennis Kovar described the status of three budgets: FY08 execution, FY09 request/appropriations, and FY10 planning. The FY08 omnibus bill provided $63M less than FY07 (-8.5%). Language specified no funding for the NOvA project at Fermilab; International Linear Collider (ILC) and SRF Research and Development (R&D) capped at ~1/4 requested. He described some of the impacts of the FY08 omnibus bill. There would be a total loss of 400FTEs at Fermilab and the Stanford Linear Accelerator Center (SLAC) (because of NOvA and ILC/SRF funding) at the end of FY08 plus a “rolling furlough” at Fermilab. There are major negative impacts on the reliability of the US as an international partner for science.

Kovar reported that FY09 included funding for the NOvA project and a modified plan for ILC and SRF R&D but 6-month CR was expected. The budget was essentially at a constant level of effort because of cost of living increases; this would erode HEP effort.

Kovar reported that the Dark Energy solicitation received 70 proposals requesting ~$15.2M involving 198 researchers. The review panel met last week; available funding was at ~$3.5M.

DOE, NASA and OSTP had met regularly to lay out the plan for the Joint Dark Energy Mission (JDEM). JDEM would be a medium-class strategic mission with a competitively selected, PI-led dark energy science investigation. An Announcement of Opportunity (AO) will be released in 2008, preceded by a draft AO for public comment. A particular concept will be selected and the conceptual design done in FY09 with an expected launch in 2014-15.

The Gamma Ray Large Area Space Telescope (GLAST) launch was delayed and the launch is now expected in June 2008.

DOE and NSF asked the High Energy Physics Advisory Panel (HEPAP) in November 2007 to identify and evaluate the scientific opportunities and options that could be pursued at different funding levels for mounting a world-class, vigorous and productive national particle physics science program. A final report was expected in June 2008.

The Chair asked for questions from the Committee. Katie Freese asked Kovar to speak to the restructuring of DOE. She understood that university program would be competing with big labs. Kovar replied he wanted to optimize the program for funding that goes to universities and national labs. Stubbs asked how HEP was dealing with its facilities, given that sustaining existing facilities was an agency objective? Kovar replied that many facilities have been phased out.

The Chair acknowledged the major milestone of the NASA/DOE agreement on JDEM. Phinney aked about the potential reprioritization of JDEM in the decadal survey; "Has DOE bought into that process and will it recognize the prioritization that comes from there?" Kovar replied that if a decadal survey decided that JDEM was a lower priority, it would not change the particle physics community's assessment of JDEM's importance in particle physics." Morse replied clearly that this was a nuance that we would have to deal with. "We have a community-based prioritization from the NRC; our plans forward will reflect that recommendation."

Jon Morse reiterated that his February AAAC presentation included all the information on the FY09 budget. The FY08 operating plan had come back. NASA proposed to Congress to use $60M appropriated for moving the Space Interferometry Mission (SIM) into development (Phase C/D or "construction") instead to do formulation (Phase A-B) of SIM-Lite and to conduct studies on other techniques. SIM would continue in formulation (Phase B), including cost studies and other reviews.

Morse reported that the GLAST launch had slipped to June 2008. This was due to the launch vehicle; the payload was doing well.

Morse reported that the James Webb Space Telescope (JWST) went through preliminary design review (PDR) and non-advocate review (NAR) of the design and schedule. It moved the project from Phase B into Phase C. The Agency policy was that JWST will have a 75% confidence limit budget profile. This had not been reflected in appropriations, but cost reserves would reflect agency policy.

Morse concurred with Kovar's report on JDEM.

The Chair asked for questions for Morse. Phinney asked whether were any changes since Ed Weiler had come on board? Morse replied "No." Lester asked "Does the Chief Scientist Office still exist?" Morse replied "Yes."; John Mather had returned to Goddard as Senior Scientist on JWST, coincidental with Alan Stern's departure. Weiler was looking for science advice primarily from Division Directors; Paul Hertz currently filled the role that Weiler will likely envision for Chief Scientist.

Lester asked about other potential changes. Morse noted that Weiler concurred with restoring Research & Analysis (R&A) funding to the previous levels of the FY04-05 timeframe. The FY09 Request would do that. Emphasis would be that missions would get done with proper data analysis.

Jonathan Lunine joined the AAAC meeting by telecon.

Morse noted that Astrophysics could offer programmatic level answers to any questions regarding the letter to the AAAC from the SIM Science Team.

The Chair asked Lunine to review changes to the report since the February meeting. Lunine noted the major comments from AAAC:

- executive summary too technical—revised
- too many recommendations, need organization—numbered and organized
- requested table of number of nights required for ground-based programs—subgroup prepared table now in report
- asked for recommended program in graphical form in executive summary—done
- too negative about giant planet studies, particularly if eta_earth << 1—modified text to avoid inadvertent implications that giant planets not interesting
- eliminated reference to AO centers being closed (only one idiosyncratic example)
- clarified recommendation/specification for astrometry mission
- clarified recommendation for blue ribbon panel for technology assessments for astrometry and direct detection
- made references consistent
- added statement about theory in planet formation studies
- removed specific labels for missions where not needed

Lunine noted comments from the public readers. There were minor clarifications in the report but no changes to the recommendations.

The Chair acknowledged that the report was substantially improved and had come together beautifully. He asked for comments or questions from the Committee. Carney asked Lunine about the particular finding that an astrometric mission should fly regardless of the value of eta_earth. Lunine replied that Yes, even if eta_earth was small, there will be an enormous amount of information about masses and orbits of non-terrestrial planets. An astrometry mission would still be extremely productive for characterization of the solar neighborhood. There was another caveat elsewhere that if you cannot meet recommended precision, then reevaluate. Carney requested some additional clarity for that finding. Stassun concurred. Lunine said there would be a clarification of that recommendation on page 65 of the report. Phinney asked about recommendation A1. Lunine replied that he would clarify it for astrometry.

Weinberger asked about the recommendation for a microlensing mission. She did not see much habitable zone left that needed a microlensing mission. Lunine replied that he would point to clarifications in report.

The Chair noted that the Committee had identified only a few minor clarifications. He proposed that the Committee vote on a transmittal to the agencies pending these clarifications. Rieke moved to accept the report and transmit it with improvements discussed today. Bruce Carney seconded the motion. Phinney recused himself. Freedman abstained and would email an approval once she had reviewed the latest version. (She had been on travel.)

The Report was approved for transmittal to the Agencies, once the remaining small changes identified in the discussion at the meeting were made. Lunine signed off from the telecon.

Stassun asked how the AAAC members could best disseminate the report. Dodelson asked if the agencies could report on task forces that had been implemented. Lester said it could be useful to discuss lessons learned on task force activities in general. The Chair concurred.

The AAAC discussed the Vice-Chair position. The Chair noted that Rocky Kolb had volunteered. Kolb noted that there was no active consideration for U. Chicago involvement in GMT. The Chair discussed that the Vice-Chair position would not formally be the Chair-Elect, as had been discussed early in the AAAC's life. Experience had shown that it was valuable to involve the new members in the process of electing the Chair and Vice-Chair, and that the Vice-Chair role would not necessarily lead to the Chair. The members unanimously elected Kolb as Vice-Chair. Freedman noted that Kolb had a very different background, and she felt comfortable turning over discussions as needed, particularly when they involved GMT or GSMT issues.

Weinberger asked about the letter from the SIM Science Team. The Chair replied that he would generate a response via email; the letter of response would be public. Discussion should follow consideration of letter.

Dana Lehr thanked outgoing members for their contributions and service to the agencies: Bruce Carney, Katherine Freese, Daniel Lester, and Sterl Phinney. She expressed particular gratitude to Garth Illingworth for his long term as Chair.

MEETING ADJOURNED AT 4:00 PM EDT, 9 MAY 2008

Addendum: AAAC member Wendy Freedman voted to approve the ExoPTF report via email at 5:30 pm on 8 May 2008.