AAS Biennial Astronomy Chairs Meeting
Saturday November 1, 2008

Welcome message from AAS Executive Officer of the AAS, Kevin Marvel. The AAS is in the middle of many major changes, including changing the journal publisher. Dept. Chairs are urged to encourage their graduate students to join the AAS as junior members.

Linda Sparke adds her welcome and asks whether in future meetings, chairs would be willing to pay a nominal meeting fee of, e.g. $50, to help with costs for food and the meeting room? General feeling seems that that would not be a problem.

Telecom with Roger Blandford and Michael Moloney on the upcoming Decadal survey: Before this, the chairs discussed
-- the anticipated role of the survey (is it still important to do this)?
-- How will the survey panel be constructed?
-- Other fields are now conducting similar surveys, including planetary and solar surveys. How can the astronomy survey be made to stand out? How does this survey interface with the planetary and solar surveys?
-- will panels consider the human element, e.g. will the manpower available in the field be appropriate to the state of the field in the next decade?
-- data analysis, hardware and software demands of the proposed projects?
-- Lab astro data is lacking in support of many missions. A lot of this is at the interface between fields and may not get priority in review panels.

Phone call, introduction by Roger who is now the only named member of the survey panels. There is a slightly larger budget than in 2000, to enable the panel to be more fully and widely constituted. Since the committees are not yet created, the process is not yet established. Historically, astronomers have done a good job of prioritizing. The last survey, despite some criticism, was quite a good job. The costing problems that subsequently developed were largely beyond the control of the survey committee; but as a consequence, little of what was recommended has been fully accomplished.
The next decadal panel will be under pressure to report in a timely manner. If we have to go slow we will, but we will all be better off if we can make the deadline.
A decadal survey must rely on an honest assessment of resources, both financial and human, and what is going on internationally. Many other reports in the last 10 years, so much of our groundwork has already been done and will only need updating.
Connecting quarks with the cosmos" was motivated by the impression of an emerging area between physics and astronomy that was not getting attention from either discipline. It did make recommendations and communicate the science to a wider community. In this Decadal survey there is interest in other interfacial areas.; we must make choices is dealing with this. For example, we will not make recommendations on space-base solar observations or in-situ solar system explorations (at NASA's request), but will consider ground based solar observations and exoplanets. The boundary with physics is currently fuzzy; we don't know yet if cosmic rays are in or out.

Reviewing projects from the 2000 decadal survey (McKee-Taylor; AANM), Roger's slide 6 shows in green projects well underway and delivering data, in blue things under construction and in red projects that have not started construction. That survey emphasized budgets to include operations, and data analysis through research grants; called for DOE to produce a strategic plan for astronomy; and for NASA to have a balanced program: but these haven't really happened. It recommended inter-agency and international collaboration and cost sharing. GLAST/*Fermi* is an example of successful inter-agency collaboration, to bring together people of complementary skills and make something happen that otherwise wouldn't.

Slide 7 shows costs for construction and 5 year operations for major and moderate space missions from AANM. The light blue background shows major missions, and the green background the moderate missions: red/green/blue code as above.. The costs are now known to be much larger than originally estimated, and many things didn't get started. Several of these missions will be reviewed again in the 2010 survey, since its charge requires that if a project is not yet started, it is back on the table for reconsideration. People won't like that, but that is the way is. Slide 8 lists more facilities put forward in AANM; some are under way, some not yet started.

Slide 9 summarizes the charge to the 2010 survey. In particular the report should be concise and emphasize the essential conclusions, to ensure that it will have the required impact. (The 2000 report perhaps was not read as widely and as thoroughly as it should have been and much of its wisdom was overlooked.) The report must speak to agencies, congress and the community. We will need to establish a consensus within the scientific community that the report represents the best that we can hope to accomplish given the finite resources that will be available.

The 2010 survey will need to pay attention to the true costs of missions and projects. The agencies themselves want us to make a much more sophisticated attempt to get realistic costs for the full-up operation with proper contingencies, not relying on the project or the agencies for those numbers. How we will be doing that is not yet known: the BEPAC review may provide a model for some projects. Some recommendations may be to continue only if the project successfully passes milestones -- this is more often done in physics. The output will be nuanced and related to different funding scenarios. Finally we will make comments on the funding organizations and their advice structures.

The Chairs can help this process by engaging the astronomical communities. Input is solicited on the web and people should be encouraged to keep sending information to the web site. The Chairs should communicate via the upcoming Town Hall meetings, such as those planned for the AAS meeting in Long Beach. Because of the legal restrictions, panels can give out little interim information, so the more information the community can give them early in the process the better. The schedule is to accomplish considerable work through 2009, merging recommendations by the end of the year, so that the final report can appear in the summer 2010.

Questions from the chairs:

How will the survey cope with the many new areas of interface with other disciplines and sub-fields, e.g., physics, chemistry, biology? Will consider them but have to be careful about where the boundaries lie.
The human resources issue is indeed part of the charge. First we get the facts: how many astronomers are there, what will be needed so we have the right skills to build the missions recommended?
Computation and data processing is mentioned (at least tangentially) in the charge. Handling data, running large simulations, etc. are all great challenges in the future. Power and cooling problems show we may be approaching limits and need to get smarter.
How do we archive large data sets to make them useable to a wide population? We will be taking that very seriously, as do most agencies, universities and centers. We will be tapping into that work.
Balance between the big projects versus the smaller and intermediate projects? Astronomy benefits from projects of all scale and it isn't clear what the optimal scale is for each one. What is the main figure of merit? How do you optimize your scientific return? We are not going to prejudge that issue. Historically, science budgets are not predictable or necessarily tied to what is going on in the rest of the world. We can't predict what the state of funding for the agencies, so we will have contingencies for increasing or decreasing budgets. We would like to avoid what recently happened with NASA where the rising costs in the big projects squeezed out the Explorer missions.
Recommendations made by reports such as this can be undercut by lobbying: how to defend them? Try to establish the social consensus within the astronomical community that we will all be better off advocating a coherent program rather than individually requesting earmarks for specific items.
Will there be a panel that could represent the interests of small universities and small astronomy groups within larger programs? Probably not, but there will be representation from smaller departments and colleges, and small telescope users. We would fail with the charge to represent the whole community if we didn't do that. Similarly, we will emphasize the importance of the small research grants, but there won't be one panel that looks at that.

Update on NSF from Eileen Friel, Executive Officer in the Astronomy Division: changes to the proposal submission process, new things in the grant proposal guide, impact of these changes and update on the division, budgets and projections.

A new Grant Proposal Guide will take effect after the beginning of the New Year. The changes are largely dictated by the America Competes Act. NSF is responding with the development of new requirements including the need for a plan for postdoctoral mentoring. There are no strict guidelines on this, there just needs to be something said here in proposals. This requirement *must* be met since it is part of the basic grant requirements. It should be noted that within the Astronomical community we already have a tradition of professional development for postdocs (and students), so that we needn't necessarily make big changes in what we do, but we do need to document what we do in mentoring. Departments may wish to develop practices within their departments to ensure proper postdoctoral mentoring in keeping with best practices. It may also be an opportunity to propose budgeting some of the postdoctoral support for,

say, teaching or other professional development. Note that for foreign nationals there is a legal distinction between a postdoctoral fellow and a research associate. Would this apply to a postdoc who is an "unfunded collaborator"? It is thought that this requirement only applies to proposals with a budget request on the line listed as Postdoctoral Support.

Small Grants for Exploratory Research are no more, replaced with two others. The Rapid Response Research grant is for work where external events create urgency (e.g., study effects of Hurricane Katrina). They are not subject to external review and are limited to 1 year and less than $200K. You should contact the program officer, but there are no restrictions on when you can send such a proposal in. The Early Concept Grants for Exploratory Research (EAGER) programs supports potentially transformative work in untested areas, novel concepts, etc., that might provide special or unique opportunities. These are up to $300K and up to 2 years. Both of these are part of a larger emphasis on transformation research. A lot of attention is being paid to this concept by the National Science Board and Congress.

NSF is seeing more grant proposals that are non-compliant, and dealing with them takes up a lot of time. There are basically 3 general areas. First, people don't address the prior NSF support in the body of the proposal. The information should be easy to identify for the program officer who is checking the proposal. There is the formatting issue including font size, margin size, etc. You make it harder on the reviewer if you violate these guidelines. Letters from Collaborators must be included to indicate that unfunded collaborators have agreed to do the work. It can be an email copied into the supplemental documents. Incomplete biographic information or bios that don't obey the limits, or fail to include the lists of collaborators, are also common. Make sure to list the people you have actually worked with. If you have so many collaborators it won't fit on two pages then reduce the font rather than go onto more than two pages (which you can't do). A piece of advice: download your proposal and make sure your PDF is what you intended! It helps us if that it is a searchable document. The official fonts are those fonts that Fastlane guarantees to be able to print. Note that the interpretation of standards about some details may differ between divisions within NSF.

The number of lab astro proposals NSF has been getting has been going up and the proposals have been doing relatively well. This year, for example, there may be enough of these proposals to constitute a lab astro panel. Chemistry has been more receptive to such collaborative proposals than, say, Physics. There seems to be a myth that NSF doesn't support preparatory proposals for future missions. That isn't true, but AST does not have a separate program for such proposals. The budget for Astronomy doesn't have internal divisions for its budget. This allows more flexibility to fund the best research that is proposed, and it means that people should feel free to propose things that might be outside of what might considered to be "standard." Another myth has to do with E/PO. NSF doesn't have a separate budget for that but people can include such costs in the base proposal budget. If you find yourself in a position to realize a special opportunity in this area, please contact us and let us know.

Regarding budgets, as most of you know this is a challenging year. NSF is on a continuing resolution until March. The future is very uncertain. The possibilities include reductions on level funding (from FY07), to an increase at some level. The timing of the budget issue means that the timing of the response to the proposals means that things are likely to be much delayed. As a result of that uncertainty NSF is being very conservative. The division is not assuming that budgets are going to grow at all. The graph passed out shows the AST budget over 1994-2008. There has been substantial growth, and the balance in the portfolio has changed. Prior to 2002 facilities took up 70% of the budget. In 2003 more money went into the core research grants, and funding in this area has more than doubled since 2002. For a few years there was a success rate of about 35%. This has not been maintained, however, because of the increase in the number of proposals. Success rate is now about 20%. A shifting dynamic between astronomy, physics, NASA, and other programs affects this area. The instrumentation program has also grown. The NSF has been trying to establish a balanced portfolio that is not dominated by facilities or operations. The Senior Review made a very strong statement about that.

A question about notification: after a panel the program officer can provide an informal assessment of the likelihood of funding, but a lot of paperwork must be completed prior to the release of the reviews, so a delay that is difficult to avoid. The goal of NSF is to provide a formal decision on 70% of proposals within 6 months, but as a practical matter this can be difficult to achieve.

General Discussion: For someone who is 100% funded on grants, how do we take care of the formal problem of people doing "University Activities"? See OMB circular 8A21. University Sponsored Program offices are becoming increasingly pro-active in terms of compliance with regulations, which has the potential for increasing costs at the departmental level. Universities have become increasingly dependent on grant-funded staff to carry out other activities: e.g. requiring "University Activities" during the summer from faculty members who have summer salary from grants. The situation seems to be evolving, and different universities have different approaches to certifying effort and complying with regulations.

Kevin Marvel, AAS: Everyone is reminded that the journal publishing is moving from the U. Chicago Press to IOP. ApJ Letters is moving to all-electronic format with a print on demand option. It is anticipated now that the other journals might move to this strategy in the near future. It represents better how the community currently uses the journals. The copyediting, layout, etc. will be all the same; it simply won't be printed. Although the change in publishers has entailed considerable cost it is anticipated that there will be significant savings with the new publisher.

The IAU has declared 2009 the International Year of Astronomy. (It is also the International Year of the Potato.) AAS will be conducting outreach activities into promoting Astronomy as a basic human endeavor. The goal is to try to get everyone in the US to have some sort of astronomy experience in the year. There is a web page at http://astronomy/2009.us about the IYA. One global project is the Galileo Telescope, an inexpensive telescope that should cost about $10 on a bulk order. The idea is that kids

could build the telescope and learn about optics, and then duplicate the observations that Galileo carried out. The project is awaiting funds to begin production. The funding problem means that the telescopes won't be available until April 2009 at best.

The big problem with IYA is funding. NSF has provided the AAS some funds. NASA is doing its own show. There is information available on the website about how professors, scientists and students can get involved. It is requested that if you do public outreach events in 2009 please brand them as IYA activities. (Logos are available.) Please notify the AAS using the email link on the web page. There hasn't been any outreach to departments yet, but notifying the chairs in this meeting is the first step.

There are downloadable and printable displays that can be set up on your campus as a way of promoting astronomy. If you have ideas that you think might benefit others, please send a note into the AAS. There will be a special premiere of a documentary on 400 years of the telescope at the Long Beach meeting. There will be a special Galileo Ale available at that event also.

A third Women in Astronomy Conference is planned for October 20-23 of next year at U.Maryland (contact Anne Kinney at anne.l.kinney@nasa.gov). This is a followup on the Baltimore (1992) and Pasadena (2003) meetings. There is an ongoing request for departments to endorse the Pasadena recommendations (www.aas.org/cswa/pasadenarecs.html) on the status of women in astronomy, at www.aas.org/cswa/pasadena_endorse.html.

Chairs are urged to promote AAS membership to students. AAS provides a number of significant benefits: ownership of journals, public policy activities, materials distributed, discounts on meetings and ability to make presentations. AAS executives are available to come to departments to give colloquia and seminars on public policy issues. Suggestions for improved benefits were made on job searches, including special notification of openings to members, continuous job page updates, resume posting page. The AAS position is that limiting the job page update to once a month simplifies the information gathering activities of job seekers. (It is felt by this scribe that that is not an adequate reason for withholding timely data.) While these ideas are not currently planned, Kevin Marvel thanked the group for the suggestions!

There is a planned IAU membership web page to simplify the process of joining the IAU.

Training Future Astronomers (Steve Spangler, chair):
Graduate program: What is your perception of the current graduate student applicant pool? The big programs have over 100+ applicants for maybe 15 slots or so.
How much weight is given to the GRE scores? Some studies indicate that women have lower scores on average. One report is that low scores tend to indicate problems, say less than 30 on Physics and less than 90 on quantitative. For students in a physics program, a low score tends to predict difficulty in passing the qualifying exam. Most programs use GRE more as a rejection criterion rather than an acceptance criterion, i.e., low scores

suggest high probability of failure but very high scores don't indicate greater likelihood of success.
How big a factor is undergraduate research experience, including summer REU? How do astronomy PhD programs rate that in their applications? Perhaps we are becoming a little jaded in this area since more and more undergraduates do have some research experience. There seems to be some disagreement on this. There were fervent comments suggesting that undergraduates really should have research experience documented in their application. Others were not so sure if it was essential. Too much research at an early phase might mean students miss a thorough grounding in basic physics. Obviously admissions committees look at the big picture. Undergraduate research experiences do help inform the letters of recommendation and create possibly useful contrasts between the research mentor and course teachers. Again there is a contrast between an astronomy and a physics program. In an astronomy program one might put a premium on astronomical experience including a research experience.

How are your graduate courses changing? One place reports a drive to more specialized courses – stellar atmospheres being replaced with X-ray astronomy. Basic computing skills are very lacking, so some are implementing projects or courses in that. One program has added a course in professional ethics. It seems like a big topic to consider how the PhD curriculum should be constructed these days. In one university nobody is allowed to teach a course for more than three times in a row, thus preventing a particular course from becoming stale. Another person observes that while we want our students to learn fundamental physics, a physics department often doesn't teach those topics in the way that will be most useful for astronomers. Although it is an extra burden for an astronomy department to teach the physics in an astronomical way, it is perhaps desirable.

Are people having difficulty in supporting students through their graduate studies? How doe we achieve a right size in the number of students? One approach is simply to try to fill the TA slots, or to look at current funding. But should we take into account the expectations for future research funding?

Are PhD graduates finding good jobs? Do departments provide information about career tracks outside of academia? Some departments do by bring back former graduates or other people who are on other than academic tracks to give seminars and advice related to those careers. Within physics there is perhaps a wider culture of non-academic jobs, while in astronomy the focus is much more on the astronomical track.
Is a Masters degree a credible end point of an educational/professional track? Some departments recruit students for planned terminal masters (as opposed to Masters degree as a parting gift). TA slots are limited, and giving them to terminal masters students limits the number of PhD-track students. Are we training our students to be versatile, or so narrowly that they don't end up with transferable skills? One argument in favor of a viable Masters program is that it gives people options. But are there (potential) needs for such people? We don't want to train people for jobs that aren't there. The fact that different programs have different emphases is a good thing and that is a strength of the field. We shouldn't try to converge to some sort of ideal.

What sort of preparation do you seek in a faculty candidate? Should we encourage our postdocs to teach classes? Departments want to hire people who can teach the big courses, so experience there is an advantage in the recruitment process. If students are involved in your job search process they will bring a different perspective, that favors skills in teaching and ability to relate to students. Even though research institutions place high value on research skills, these days nobody gets tenure if they can't teach reasonably effectively. Whether or not a job applicant has taught before isn't necessarily significant, but they had better be able to convey (say through the colloquium) that they are an effective communicator. Some felt that having some teaching experience is a good thing but teaching several courses doesn't add much to your resume. Others felt that just having a class isn't necessarily a good thing unless there is some additional factor like evidence of creativity, or glowing student recommendations. One institution has job candidates teach an introductory lecture as part of their job interview. (Deans like that sort of thing.)

The Vanderbilt PhD program is new and in creating the program they have had to deal with many of these issues. They have seen a rapid growth. Part of this is due to linking their masters program to a program at an HBCU (Fisk). Students who bridge in from the Fisk program are put in the Masters program and required to take two PhD level courses and do a Masters thesis. The thesis provides the best assessment of the student's research experience, and having the opportunity to be engaged in research early on provides a powerful motivation for these students to stay with the program. Out of necessity Vanderbilt postdocs commit 20-25% of their time to the teaching program and have become an integral part of the mentoring process.

Assessment (Neal Evans chairing): Are institutions required to have quantitative assessments of courses and programs, and what metrics are people using? All accrediting agencies require some form of assessment, but institutional interpretations vary quite widely. The requirements are often framed in terms that are foreign to our programs, speaking in terms of "rubrics" and such ("edu-speak"). We need to share our metrics to minimize the "reinvention of the wheel" as more and more accrediting agencies require these. The experience of departments that have gone through this already will be very valuable.

Other topics:
How do we make the case that Astronomy education, including "Astro 101", is valuable to society as a whole? It is widely recognized that future citizens need to learn to carry out critical thinking and have some science literacy. Astro 101 may be a student's only exposure to that. Study of the planets and planetary processes aids understanding of the Earth as a system, global warming, biospheres etc.

How do we get money and other resources from the Dean or campus? Someone suggested that an enthusiastic outside donor could help.

Action items:
Hold a November 2010 meeting in the same venue, also the day ahead of the Midwest Physics Chairs meeting, again with a Friday evening session in a private room. End by 4pm on Saturday as people are drifting off to catch flights.

Poll chairs in mid-2009 on a splinter meeting at the January 2010 AAS meeting; some chairs who did not come to Chicago said that AAS meetings would be easier for their travel plans.

Post documents on postdoctoral mentoring plans on the AAS Chairs website.

Find a way to exchange program assessment plans (on the website or otherwise).

A wider discussion of spousal hiring might be of interest.

Thanks to Steve Hawley and Thom Robertson for taking notes!