**Astro2010 Decadal Survey Town Hall Meeting**

**Princeton University, March 10, 2009**

Roughly 70 people attended, from Princeton, Rutgers, New Jersey Institute of Technology, and other institutions.

Representing the survey itself were:
- Scott Tremaine (member of the survey committee)
- David Spergel (Chair of panel on cosmology and fundamental physics)
- Bruce Draine (member of Galactic Neighborhood panel)
- Neta Bahcall (member of panel on Galaxies across Cosmic Time)
- Adam Burrows (Liaison to the Board on Physics and Astronomy of the National Research Council, who is managing this survey)

Neta Bahcall, who organized this town hall meeting, introduced the meeting by stressing the two goals of the meeting:

-To share the plans for the decadal survey itself
-To get input from the community to the survey committee

She also emphasized that these decadal surveys have had a history of success, because we as a community have been able to prioritize our projects and missions, and then we stand behind these recommendations.

*********The structure of the decadal survey

Scott Tremaine presented a detailed description of the structure of the survey committee, and the various inputs and criteria with which it will make its recommendations. He stressed that the committee report will make recommendations only.

The survey is sponsored by the funding agencies (NSF, NASA, and for the first time, DOE).

Much of the details of his presentation may be found on the astro2010 website:
http://www7.nationalacademies.org/bpa/Astro2010.html

Many of the projects that were ranked highly in the previous decadal survey are on long enough timescales that they have not yet received a new start. This committee will revisit and reprioritize these projects as well.

The survey is working on a fast timescale, with various flavors of white papers due over the next few weeks. A major concern with the previous decadal surveys is that stated costs of various projects were often severely underestimated. This time, independent contractors will be hired to help estimate costs of all major projects.

The individual panels will finish their work by the end of the

summer; the aim is to get the committee report done, reviewed, and made public by summer 2010.

Each science panel is expected to put together a list of four important questions in the field that can/should be addressed over the next decade, plus a description of a "discovery area". The report each panel compiles will be of the order of 40 pages, and will be kept confidential until the final report is made public.

*********Presentations from the community

There were 10-minute presentations from five people, as follows:

Michael Strauss (Princeton), 'Wide-angle surveys in the next decade'
Surveys have always played a central role in observational astronomy, and that will definitely be true over the next decade. Major surveys are large and expensive, but their scientific productivity is quite high, as illustrated by, e.g., the SDSS. A major concern is support of the careers of survey astronomers, especially those who spend many years toiling away building a survey.

Inese Ivans (Princeton), 'Galactic Astronomy in the next decade'
New surveys and studies on large telescopes have synergistically led to major advances in the structure and formation of the Milky Way, including studies of very low-metallicity stars, streams in the halo, and ultrafaint dwarf companions. A Southern counterpart to the SDSS is needed to map streams over the entire sky. High-resolution spectroscopy is crucial for studies of low-metallicity stars and globular clusters in nearby galaxies (which will require a 30-meter telescope). SIMlite and GAIA are very important, as is further laboratory and theoretical work on line lists, oscillator strengths, neutron capture cross-sections, etc.

Huntao Ji (Princeton): Roles and Future direction of laboratory plasma astrophysics.
Plasma physics underlies processes important at almost all scales in astrophysics. Progress in plasma physics is led by laboratory experiments, accompanied by theory, simulation, and in-situ space observations. They are now exploring topics like magnetic reconnection and the magnetorotational instability experimentally. These experiments don't try to directly simulate astrophysical phenomena, but they do provide ground truth of underlying physical processes. We need coherent funding strategies, including coordination from multiple agencies (especially NSF and DoE), and collaborative organizations to handle this sort of interdisciplinary research.

Dale Gary (NJIT): FASR: Frequency-Agile Radio Telescope
This is a proposed radio interferometry in Owens Valley to do high-spatial spectral, and temporal resolution imaging of the Sun to observe, and probe the physical processes behind:

Magnetic fields in the corona and chromosphere
Coronal mass ejections
Shocks, electron beams, etc. in the corona
Particle emission from flares, and their acceleration mechanisms

It was highly ranked in the previous decadal survey.

Jim Gunn (Princeton): Galaxy Evolution and Spectroscopic Surveys for the next decade

While many wide-field imaging surveys are being planned, there are fewer spectroscopic surveys, but to answer key questions, spectral are key. In particular, galaxy evolution studies need surveys of volume similar to that of the SDSS main galaxy sample, in several redshift shells. He argues that this can be done with a survey of 60-150 deg2, to z~2. This will require an optical/NIR spectrograph to 1.8 microns, with R~4000. He suggests putting a bank of fiber-fed spectrographs on a 6.5-meter telescope, to measure 3 million galaxies in a six-year survey; the instruments would cost $33 million.

David Spergel points out that one JDEM concept, namely ADEPT, calls for spectroscopy of 108 galaxies (from space). This led to a discussion about whether JDEM would gather data focussed purely on dark energy, or whether it would allow a broader range of science.