



October 22, 2010

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Dear Dr. Weiler, Dr. Morse, Dr. Koonin, Dr. Brinkman, Dr. Dehmer, Dr. Kovar, Dr. Wieman, and Dr. Merkowitcz:

The Astronomy & Astrophysics Advisory Committee (AAAC) is charged in part to assess and make recommendations regarding the status of activities of the NSF, NASA, and DOE as they relate to the recommendations contained in the NRC Decadal Survey reports in Astronomy and Astrophysics. At its Oct. 7-8 meeting, the AAAC was briefed by Astro2010 chair Roger Blandford on the "New Worlds, New Horizons" (NWNH) 2010 Astronomy & Astrophysics Decadal Survey Report released in August. The AAAC strongly endorses the program of activities laid out in the Astro2010 report: there are extraordinary opportunities for discovery in the coming decade.

We also received presentations from the three agencies on their near-term activities and budgets and in particular their initial plans to implement the Astro2010 recommendations. We are pleased to see the seriousness with which the agencies are treating the NWNH recommendations. This letter concerns time-sensitive issues raised by these presentations; more comprehensive comments will follow in our March 2011 annual report.

The highest priority Astro2010 recommendation for new, large space missions is the Wide-Field Infrared Survey Telescope (WFIRST), a near-infrared imaging and spectroscopy mission that would carry out a microlensing census of exoplanets, employ several techniques for probing dark energy and cosmic acceleration, and enable near-infrared galaxy surveys in guest investigator mode. WFIRST builds on the R&D and design work carried out for the NASA-DOE Joint Dark Energy Mission (JDEM) project.

Closely related to WFIRST, over the last year NASA and ESA have discussed possible NASA participation in the proposed ESA project Euclid, under consideration for an M-class mission in the Cosmic Visions process, with a potential launch in the 2018 time frame. Euclid is currently envisioned as an optical-near-infrared imaging and spectroscopy mission primarily dedicated to dark energy studies. In April 2010, NASA Astrophysics Division Director Jon Morse sent a letter to Astro2010 describing a possible 20% NASA share in the Euclid mission. In his presentation to the AAAC, Roger Blandford noted that the Astro2010 report: (1) considered a possible international component of WFIRST, (2) stated that the US should have "a leadership role" in any such international mission, and (3) stated that such a mission should preserve all three science goals of WFIRST. He also noted that a 20% US share in Euclid was not among the NWNH recommendations. In his presentation to the NAC Science Committee in September and to the AAAC this month, Morse outlined a plan in which NASA discussions with ESA would continue and, in parallel, a WFIRST Science Definition Team would be formed in the near future. Part of the rationale given for this two-track approach was the recognition that cost overruns and schedule delays on the James Webb Space Telescope (JWST) are expected to stretch out its launch schedule, possibly to the 2015-2017 time frame, which NASA anticipates would result in delay on a start of WFIRST, with likely launch of the latter no earlier than 2022.

The committee is concerned about the impacts of potential JWST cost increases and schedule delays on the Astro2010 recommended space activities for the decade, including the small and medium activities.

The NAC Science Committee recently made the following recommendations with regard to WFIRST and Euclid:

*A. NASA's implementation of Wide Field InfraRed Survey Telescope (WFIRST) mission*

- NASA should proceed with implementation of WFIRST as the top priority large space mission of Astro2010
- NASA should solicit nominations for the WFIRST Science Definition Team (SDT) as soon as possible, including representatives of all three of WFIRST's science areas and members of ESA's Dark Energy Mission, Euclid. By Summer 2011, the SDT should complete a conceptual mission design that is mature enough to support NASA negotiations with ESA on a collaborative mission.

*B. NASA's role in ESA's Euclid Mission*

- NASA should keep open the option of a possible partnership with ESA on the Euclid mission.
- If Euclid is selected by ESA, NASA's goal should be the negotiation of a joint ESA/NASA program that meets the science goals of both the Euclid and WFIRST missions and comprises either a single combined mission or two complementary missions.

The AAAC came to the same conclusions with regard to WFIRST and Euclid and believes these recommendations are consistent with those of Astro2010. The Oct. 5 announcement of a planned "Dear Colleague" letter on the formation of the WFIRST SDT is an important step in implementing the first part of this plan, and the Oct. 7 Community Announcement of a planned solicitation for NASA Science Team members for Euclid is an important step toward the second. The combination of top U.S. priority on WFIRST and strong European interest in Euclid presents an opportunity for a coordinated program that could achieve more than either community could accomplish on its own.

We look forward to hearing the agencies' plans with regard to Astro2010 implementation as they evolve.

Sincerely yours, on behalf of the Committee,

Kim Griest,  
Chair, Astronomy and Astrophysics Advisory Committee

cc: Dr. Edward Seidel, Assistant Director, Mathematical & Physical Sciences Directorate, National Science Foundation  
Dr. James Ulvestad, Director, Division of Astronomical Sciences, National Science Foundation  
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