



NASA Keck Time Discussion

Presentation to the Astrophysics Subcommittee

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History

- 1996: NASA-Keck partnership is announced
 - strong emphasis on Keck Interferometer, Extrasolar planets, and the Origins Program, groundwork for future interferometer in space
- Under the terms of the agreement NASA provided a 1/6 of WMKO telescope construction and operation costs in exchange for ~95 observing nights (both telescopes, total)
- The mechanism of funding has changed throughout the years
- NASA contributes to Facility Renewal in approximate proportion to the contributions of the other partners, historically through a separate unsolicited proposal
- NASA investment in Keck facilities and operation totals approximately \$70M (real year dollars)
- Keck Interferometer project is funded separately



Current Status

- Currently, the NASA Keck time is used for:
 - Detection of extrasolar planets
 - Origin and nature of planetary systems
 - Investigations of our own Solar System
 - Mission Support
- NASA/Keck Cooperative Agreement provides unique capability to conduct fundamental research central to the NASA Science Goals and to carry out mission-preparatory and mission-supporting objectives
- SMD Science Plan 2007-2016, Astrophysics Division:
 - Strategic goal: *Discover the origin, structure, evolution, and destiny of the universe, and search for Earth-like planets*
 - 7.2.1 The Birth of the Universe; the Extremes of Spacetime
 - 7.2.2 The Origins and Evolution of Cosmic Structure
 - 7.2.3 The Origin and Destiny of Stars
 - 7.2.4 Exploring New Worlds



Statistics

- NASA Keck time amounts to ~95 nights/year
- For the last several years:
 - 2005-2006:
 - ~50% KI (mostly Nuller, but also some V² mode)
 - ~25% HIRES for RV work
 - ~10-15% instruments with AO (NGS or LGS)
 - ~10-15% instruments without AO (NIRSPEC, some of it for RV)
 - 2007-2008: Key projects dominate
 - 2007: Eta_Earth program ~60 nights over 4 semesters (HIRES)
 - 2008: Exozodi program - ~60 nights over 2 semesters (32 KIN nights)
- Plans for 2009+:
 - Under discussion



Administration and Use of NASA Keck Time

- Astrophysics supports NASA's 1/6 partner share in Keck Observatory
 - Keck partnership is administered through a cooperative agreement, costing ~\$3M/yr
 - NASA's share amounts to ~95 nights per year on Keck I and II
 - NASA has also invested in instrumentation, e.g., Keck Interferometer and upgrades to other instruments
- Keck time is competed through a proposal solicitation
- Science content has been limited primarily to exoplanets, formation of planetary systems, and solar system research

I. GUIDELINES FOR ALLOCATION OF NASA KECK TELESCOPE TIME

The NASA fraction of the Keck telescope time is to be used to support programs of interest to NASA for exploration of phenomena, within our solar system and in others, dealing primarily with the discovery and characterization of planetary systems and investigation of their origin and evolution. The allocated telescope time will be used for investigations within three science areas: detection of extrasolar planets, origin and nature of planetary systems, and investigation of our own solar system, in the order of priority. A small number of nights may also be assigned in some semesters for observations providing critical support of space missions. Within [these broad guidelines](#), the allocation of time will be made based on scientific merit, availability of resources, and technical appropriateness. ...



Administration and Use of NASA Keck Time

Astrophysics Division seeks advice from NAC-APS on the following proposal:

- Renew the cooperative agreement with Keck Observatory
- Open the Keck observing time to all science supported by Astrophysics
 - Four science categories:
 - Cosmic Origins
 - Physics of the Cosmos
 - Exoplanet Exploration
 - Solar System Exploration
- Administer the solicitation, time allocation and awards from HQ
- Enter into an agreement with NSF/NOAO to make a fraction of NASA's Keck time available within the ground-based "System" beginning in semester 2009a
 - Allows NASA's Keck proposers options for integrated investigations with access to all facilities available to NOAO, especially in the southern hemisphere
 - Initial proposal is to allocate ~50% of NASA's Keck time to NOAO TAC process, with traceability in the proposal process to NASA science goals, and retain remaining time for other strategic use
 - Generates cost savings by leveraging NOAO TAC process