

ASTRONOMICAL SCIENCES

\$232,970,000

The FY 2008 Request for the Astronomical Sciences Division (AST) is \$232.97 million, an increase of \$17.86 million, or 8.3 percent, over the FY 2007 Request of \$215.11 million.

Astronomical Sciences Funding

(Dollars in Millions)

	FY 2006 Actual	FY 2007 Request	FY 2008 Request	Change over FY 2007 Request	
				Amount	Percent
Astronomical Sciences	\$199.75	\$215.11	\$232.97	17.86	8.3%
Major Components:					
Research and Education Grants	79.46	89.86	102.78	12.92	14.4%
Centers Programs	4.00	4.00	3.32	-0.68	-17.0%
Facilities	116.29	121.25	126.87	5.62	4.6%
Gemini Observatory	18.18	20.00	20.50	0.50	2.5%
National Astronomy and Ionosphere Center (NAIC)	10.46	10.46	10.45	-0.01	-0.1%
National Optical Astronomy Observatory (NOAO) ¹	36.91	40.05	43.18	3.13	7.8%
National Radio Astronomy Observatory (NRAO)	50.74	50.74	52.74	2.00	3.9%

Totals may not add due to rounding.

¹ Includes the National Solar Observatory and the Telescope System Instrumentation Program.

About AST:

AST is the federal steward for ground-based astronomy in the U.S., working in partnership with private institutions to enhance overall observing capacity and capability. Research support covers a broad array of observational, theoretical, and laboratory research aimed at understanding the origins and characteristics of planets, the Sun, other stars, our galaxy, extragalactic objects, and the structure and origin of the Universe. Individual investigator awards, special grants, and fellowship programs for young faculty, postdoctoral researchers, graduate students, and undergraduate students encourage researchers engaged in education and outreach and increase the participation of underrepresented minorities in science. AST provides the U.S. share of funding for the operation of the international Gemini Observatory and supports the operation of four National Astronomy facilities: the National Astronomy and Ionosphere Center (NAIC), the National Optical Astronomy Observatory (NOAO), including the National Solar Observatory (NSO), and the National Radio Astronomy Observatory (NRAO). AST supports the development of advanced technologies and instrumentation, planning and design for future observational facilities and collaborative projects in astronomy, and management of the electromagnetic spectrum for scientific use. In its quest to bring ever more powerful technology and a well-trained workforce to bear on the exploration of the universe, AST makes significant contributions to ACI.

The AST portfolio has two major modes of support: research and education grants and facilities.

- AST research and education grants range from awards to individual investigators to large collaborations carrying out extensive surveys or developing instrumentation.
- AST also supports major world-class facilities that provide access to a wide range of observational resources on a competitive basis.

Approximately 20 percent of the AST portfolio will be available for new research grants in FY 2008. The remainder of the funds will support continuing commitments on research grants from prior years, facilities (55 percent of the total), instrumentation, education and outreach, and centers. In FY 2006, AST received 663 research proposals and made 158 competitive awards for a success rate of 24 percent.

AST Priorities for FY 2008:

Research Grants Programs are AST's highest priority in stewardship of the portfolio. Emphasis will be given to addressing scientific priorities articulated in the National Research Council's "Astronomy and Astrophysics for the New Millennium," supporting activities in the area of cyberinfrastructure/cyberscience including a national virtual observatory in partnership with NASA, and ensuring a healthy and balanced program of research and education grants to the community.

Physics of the Universe (POU), the highest scientific priority, addresses the compelling questions that have arisen at the interface of physics and astronomy and were posed by the National Research Council report, "Connecting Quarks with the Cosmos." A subsequent National Science and Technology Council report, "The Physics of the Universe: A 21st Century Frontier for Discovery," outlines a national investment plan involving NSF, DOE, and NASA. Within NSF, POU is coordinated and supported by the AST and PHY Divisions. Activities include funding within the grants program, instrumentation development, and new facilities.

Public-Private Partnerships are a keystone of the division's strategy. In FY 2008, there will be renewed investments in the **Telescope System Instrumentation Program (TSIP)** and **Giant Segmented Mirror Telescope (GSMT)** technology development.

Gemini Observatory and ALMA operations and instrumentation are AST's highest priority in facility stewardship. Ensuring optimum performance and future instrumentation of our premier and newest facilities enables forefront research by the scientific community and their students in these international partnerships.

Changes from FY 2007:

Research and education grants increase by \$12.92 million to \$102.78 million total. AST will continue to support a wide range of astrophysical investigations from the search for extra-solar planets to the origin of the universe. Development of tools for handling large data sets and implementation of the Virtual Astronomical Observatory in partnership with NASA are emphases in AST's approach to cyberinfrastructure/cyberscience. Education and outreach activities will receive continued emphasis. Support for technology development for the **Large-Aperture Synoptic Survey Telescope (LSST)** continues and that for GSMT will be maintained at \$5.0 million.

Funding for the **Science and Technology Center for Adaptive Optics** is \$3.32 million, beginning the scheduled decrease as this STC sunsets.

Facilities increase by \$5.62 million to \$126.87 million total. Base operations funding for all facilities remains near the FY 2007 level, pending a full implementation plan for the recommendations of the Senior Review of AST facilities. See the Facilities chapter for details. Changes include:

- The increase of \$500,000 for the **Gemini Observatory** will enable enhanced operational and visitor support and continue the funding of a new generation of advanced instrumentation.
- The **NOAO/NSO** total includes design and development for the **Advanced Technology Solar Telescope**. TSIP, administered through NOAO, increases by \$1.0 million to \$5.0 million.
- **NRAO** is supported at the level of \$52.74 million, an increase of \$2.0 million over the FY 2007 Request. The total includes \$8.2 million for ALMA early operations.