

### Mission

The mission of the Division of Astronomical Sciences is to support forefront research in ground-based astronomy; to help ensure the scientific excellence of the U.S. astronomical community; to provide access to world-class research facilities through merit review; to support the development of new instrumentation and next-generation facilities; and to encourage broad understanding of the astronomical sciences by a diverse population of scientists, policy makers, educators, and the public at large.

The Division supports research in all areas of astronomy and astrophysics as well as related multidisciplinary studies. Modes of support include single-investigator and collaborative awards, funding for acquisition and development of astronomical instrumentation, technology development for future ground-based facilities, and educational projects that leverage the Division's research investments to build research and workforce capacity and to increase scientific literacy.

### Astronomical Facilities

The Division invested 46% of its FY 2009 appropriation in the management and operation of ground-based astronomical facilities. Through the national observatories and international partnerships, the Division provides support for a system of multi-aperture, research-class telescopes as well as frontier facilities that enable transformational capabilities in both radio and optical/infrared astronomy. Technological advances in a number of key areas of telescope construction and design—including sophisticated adaptive optics technology to compensate for the blurring effects of the Earth's atmosphere at optical/infrared wavelengths and high-resolution aperture synthesis techniques of radio astronomy—allow these instruments to operate at the forefront of ground-based capabilities.

### Contact Information

#### Division Director

Dr. James S. Ulvestad

#### Deputy Division Director (Acting)

Dr. Vernon L. Pankonin

National Science Foundation  
Division of Astronomical Sciences  
4201 Wilson Boulevard  
Room 1045  
Arlington, VA 22230

Telephone: (703) 292-8820  
Fax: (703) 292-9034  
Web site: <http://www.nsf.gov/astronomy>



Infrared image of the planet Saturn and its moon Titan (lower center) taken by the Gemini North telescope using an adaptive optics system that corrects, in real time, for most of the distortion caused by the atmosphere of the Earth. The quality of these high-resolution images allows scientists to monitor the formation of clouds in the atmosphere of Titan from roughly 800,000,000 miles away.

Credit: Gemini Observatory

### Programs in Astronomical Sciences

#### Individual Investigator Programs

Astronomy and Astrophysics Research Grants (AAG)  
Faculty Early Career Development Program (CAREER)  
NSF Astronomy and Astrophysics Postdoctoral Fellowships (AAPF)  
Partnerships in Astronomy and Astrophysics Research and Education (PAARE)  
Research Experiences for Undergraduates (REU)  
Research at Undergraduate Institutions (RUI)

#### Astronomical Instrumentation Programs

Advanced Technologies and Instrumentation (ATI)  
Major Research Instrumentation (MRI)  
University Radio Observatories (UROs)

#### Large Facilities

Atacama Large Millimeter Array (ALMA)  
Gemini Observatory  
National Astronomy and Ionosphere Center (NAIC)  
National Optical Astronomy Observatory (NOAO)  
National Radio Astronomy Observatory (NRAO)  
National Solar Observatory (NSO)

*A Guide to Programs / Browse Funding Opportunities* is available at [http://www.nsf.gov/funding/browse\\_all\\_funding.jsp](http://www.nsf.gov/funding/browse_all_funding.jsp).

### Electromagnetic Spectrum Management (ESM)

AST represents the interests of NSF and the scientific community in protecting access to portions of the electromagnetic spectrum that are needed for research purposes. The sensitivity of radio and optical telescopes can be compromised by electromagnetic interference from sources such as airborne and satellite radio transmissions and light pollution. ESM personnel protect these and other scientific resources by participating in the establishment of regulations, operating procedures and technical standards related to government, private sector and international uses of the spectrum.



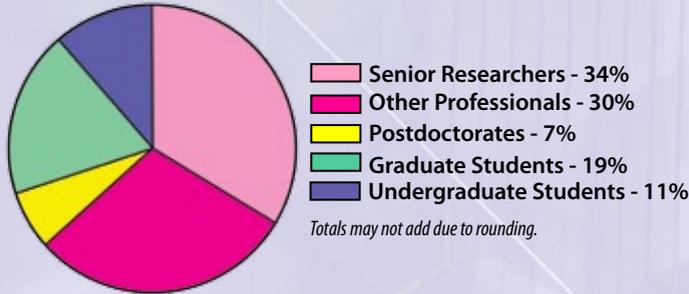
The Atacama Large Millimeter Array (ALMA) is an international collaboration to develop a world-class radio telescope composed of 66 antennas that will work together to study the universe from a high and dry site in the Chilean Andes. Once construction is completed, ALMA will function as the most capable imaging radio telescope ever built.

Credit: NRAO/AUI and ESO.

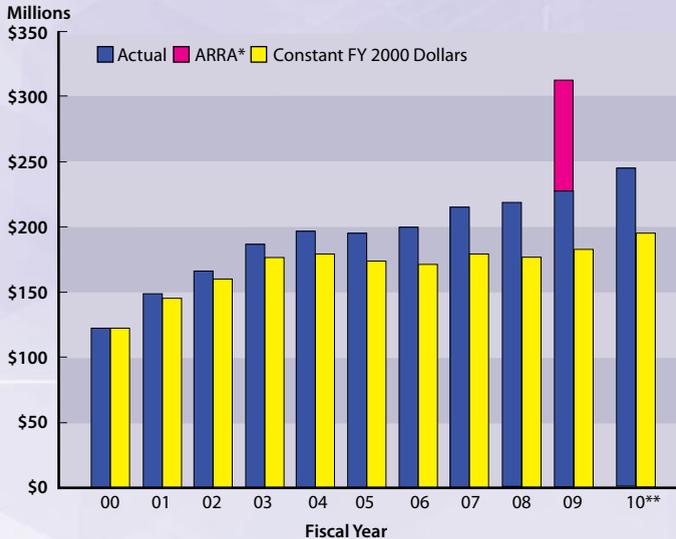
## Division of Astronomical Sciences (AST)

### Human Resources FY 2009

Pie chart showing total number of people involved in AST.



### Budget in Actual and Constant FY 2000 Dollars

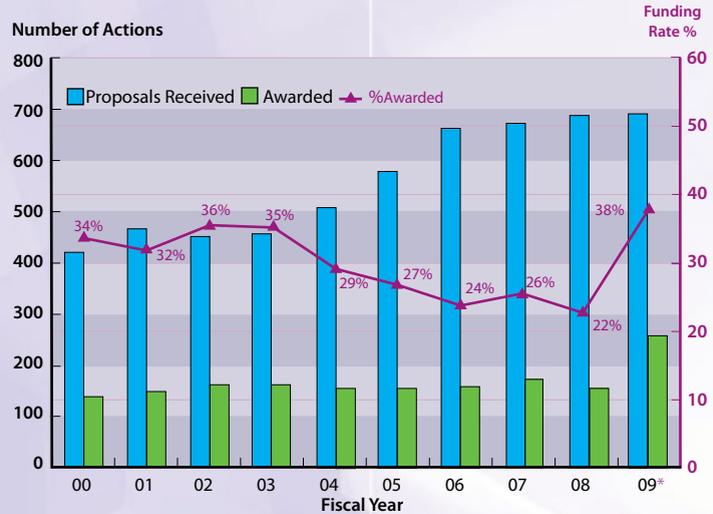


AST annual budgets in actual and constant FY 2000 dollars. Constant dollars show the purchasing power of the AST budget. Over this 11-year period, the constant dollar budget for AST has increased 60%.

\*ARRA - American Recovery and Reinvestment Act of FY 2009. \*\* Current Plan.

Data provided from FY 2000 to 2011 NSF Budget Requests to Congress, <http://www.nsf.gov/about/budget/>.

### Funding Rates and Number of Actions



Graph shows number of proposals submitted versus awarded for Research Grants as defined by NSF and resultant success rates. Success rate is defined as the number of new or renewal proposals awarded funding divided by the total number of proposals received.

\* FY 2009 funding rate includes awards made with ARRA funds.

Note: the distribution of success rates reflects the average for the Astronomical Sciences Division and may not represent success rates in individual programs.

### Modes of Support FY 2009

