

DIVISION OF PHYSICS (PHY)

\$277,370,000
+\$2,380,000 / 0.9%

PHY Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over	
				FY 2015 Estimate Amount	Percent
Total, PHY	\$267.09	\$274.99	\$277.37	\$2.38	0.9%
Research	163.82	176.05	176.19	0.14	0.1%
CAREER	8.57	7.44	7.45	0.01	0.1%
Centers Funding (total)	0.02	0.02	-	-0.02	-
Nanoscale Science & Engineering Centers	0.02	0.02	-	-0.02	-
Education	5.38	5.56	5.32	-0.24	-4.3%
Infrastructure	97.89	93.38	95.86	2.48	2.7%
IceCube Neutrino Observatory	3.45	3.45	3.45	-	-
Large Hadron Collider (LHC)	17.37	18.00	18.00	-	-
Laser Interferometer Grav. Wave Obs. (LIGO)	36.43	39.43	39.43	-	-
National Superconducting Cyclotron Laboratory (NSCL)	22.50	22.50	22.50	-	-
Research Resources	11.56	-	-	-	N/A
Mid-scale Research Infrastructure	6.58	10.00	12.48	2.48	24.8%

Totals may not add due to rounding.

PHY supports fundamental research addressing frontier areas of physics that lead to the understanding of the make-up of the Universe, from the formation of stars and galaxies to the principles of life processes on Earth. This research covers a range of physics subfields: atomic, molecular, optical and plasma physics, elementary particle physics, gravitational physics, nuclear physics, particle and nuclear astrophysics, physics of living systems, physics at the information frontier, and theoretical physics. PHY is the primary supporter of all U.S. research in gravitational physics and the leading supporter of fundamental research in atomic, molecular, and optical physics in the U.S. PHY is a major partner with DOE in support of elementary particle physics, nuclear physics, and plasma physics. PHY also has the only U.S. program designed for the support of physics research in living systems. The development of the most advanced cutting-edge computational resources, innovative technology, and new instrumentation is a key part of physics research, and tools developed by the physics community continuously have major impact in other scientific and engineering fields.

In general, 22 percent of the PHY portfolio is available for new research grants. The remaining 78 percent is used primarily to fund continuing grants made in previous years (49 percent) and to support operations and maintenance for four facilities that are a key part of the division portfolio (29 percent).

FY 2016 Summary

All funding decreases/increases represent change over the FY 2015 Estimate level.

Research

- Added funding for research grants will support additional individual investigator awards. Changes in NSF-wide investments are accommodated through strategic funding through PHY core programs.

These include:

- BioMaPS (+\$260,000 million to a total of \$3.26 million): This provides for programs that support research at the interface between the mathematical and physical sciences and the life sciences.
- Understanding the Brain (+\$2.05 million to \$5.80 million): This provides support for physics-based research that enables scientific understanding of the full complexity of the brain.
- CIF21 (+\$800,000 to a total of \$2.65 million): Additional funding for the extremely successful Computational and Data-Enabled Science and Engineering (CDS&E) portion of the CIF21 initiative.

Education

- Research Experiences for Undergraduates Sites and Supplements program (REU) (level at \$5.06 million): \$100,000 of this funding will support enhanced research experiences for students in their first two years of college, as recommended by the President's Council of Advisors on Science and Technology (PCAST) in their 2014 report, *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics*.¹² In addition, \$650,000 will support efforts to broaden participation by groups traditionally underrepresented in the physical sciences.

Infrastructure

- Large Hadron Collider (level at \$18.0 million): This supports operations of the ATLAS and CMS detectors at LHC.
- Laser Interferometer Gravitational Wave Observatory (level at \$39.43 million): This supports operations of LIGO and commissioning of its upgraded interferometer following completion of the Advanced LIGO construction project.
- National Superconducting Cyclotron Laboratory (level at \$22.50 million): This supports operations of the NSCL at Michigan State University.
- Mid-scale Research Infrastructure (+\$2.48 million to a total of \$12.48 million): Funding supports instrumentation for high-priority experiments that cannot be accommodated within individual program budgets.

¹² www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-executive-report-final_2-13-12.pdf