

DIVISION OF PHYSICS (PHY)

\$289,020,000
+\$11,650,000 / 4.2%

PHY Funding
(Dollars in Millions)

	FY 2012		FY 2014 Request	Change Over	
	FY 2012 Actual	Enacted/ Annualized FY 2013 CR		FY 2012 Enacted Amount	Percent
Total, PHY	\$277.44	\$277.37	\$289.02	\$11.65	4.2%
Research	192.73	193.68	177.48	-16.20	-8.4%
CAREER	8.03	7.01	7.34	0.33	4.7%
Centers Funding (total)	1.16	1.14	-	-1.14	-100.0%
Nanoscale Science & Engineering Centers	1.16	1.14	-	-1.14	-100.0%
Education	5.61	5.34	6.09	0.75	14.0%
Infrastructure	79.10	78.35	105.45	27.10	34.6%
IceCube	3.45	3.45	3.45	-	-
Large Hadron Collider (LHC)	18.00	18.00	18.00	-	-
Laser Interferometer Grav. Wave Obs. (LIGO)	30.40	30.40	39.50	9.10	29.9%
Nat'l Superconducting Cyclotron Lab. (NSCL)	21.50	21.50	22.50	1.00	4.7%
Research Resources	5.75	5.00	22.00	17.00	340.0%

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 the Department of Energy (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, 26 percent of the PHY portfolio is available for new research grants. The remaining 74 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 2014 Summary

All funding decreases/increases represent change over the FY 2012 Enacted level.

Research

A decrease of \$16.20 million to a total of \$177.48 million for Research Grants will be redirected to increased support of major facilities. Changes in disciplinary research support that reflect priorities include:

- CAREER (+\$330,000 to a total of \$7.34 million): This increase shows a continued emphasis on fostering career development of junior scientists.

Directorate for Mathematical and Physical Sciences

- Center for Probing the Nanoscale, a Nanoscale Science and Engineering Center (-\$1.14 million to a total of zero): As planned, support for this center will end in FY 2014.
- Cognitive Science and Neuroscience (\$400,000): Funding supports cross-Foundation fundamental research relevant to cognitive science and neuroscience.
- Changes in NSF-wide investments are accommodated through strategic investments through PHY core programs. These NSF-wide investments include:
 - BioMaPS (+\$2.22 million to a total of \$4.15 million): This provides for programs that support research at the interface between the mathematical and physical sciences and the life sciences.
 - CIF21: (+\$750,000 to a total of \$3.75 million): This funds programs that support CIF21.

Education

- Research Experiences for Undergraduates Sites and Supplements program (REU) (+\$750,000 to a total of \$5.89 million): \$100,000 of this additional 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 report, *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics*. The remaining \$650,000 will support efforts to broaden participation by groups traditionally underrepresented in the physical sciences.

Infrastructure

- IceCube (level at \$3.45 million): Funding reflects the NSB-approved post-construction ramp up in operations.
- LHC (level at \$18.0 million): This supports operations of the ATLAS and CMS detectors at LHC.
- LIGO (+\$9.10 million to a total of \$39.50 million): Funding for LIGO increases as the Advanced LIGO (AdvLIGO) construction project is completed and commissioning of the upgraded interferometer begins. (See the MREFC chapter for more details on AdvLIGO).
- NSCL (+\$1.0 million to a total of \$22.50 million): This investment increases in order to promote enhanced operations.
- Research Resources (+\$17.0 million to a total of \$22.0 million): This funding covers support for mid-scale instrumentation and a new program in accelerator science.