

DIVISION OF MATHEMATICAL SCIENCES (DMS)

\$244,540,000
+\$6,770,000 / 2.8%

DMS Funding

(Dollars in Millions)

	FY 2012		FY 2014 Request	Change Over	
	FY 2012	Enacted/ Annualized		FY 2012	Enacted
	Actual	FY 2013 CR		Amount	Percent
Total, DMS	\$237.72	\$237.77	\$244.54	\$6.77	2.8%
Research	212.04	219.11	227.05	7.94	3.6%
CAREER	9.61	3.33	4.13	0.80	24.0%
Centers Funding (total)	0.10	0.10	0.10	-	-
Centers for Analysis & Synthesis	0.10	0.10	0.10	-	-
Education	25.68	18.66	17.49	-1.17	-6.3%

Totals may not add due to rounding.

NSF plays a critical role in the mathematical and statistical sciences, as it provides more than sixty percent of all federal support for basic research for these fields in the Nation’s colleges and universities. In certain core areas of the mathematical sciences this percentage is much higher, since NSF funds a broader range of fundamental and multidisciplinary research topics than do other federal agencies.

DMS supports research at the frontiers of fundamental, applied, and computational mathematics and statistics, and also enables discovery and innovation in other fields of science, engineering, and education. In turn, advances in science, engineering, and education, especially those that generate big and complex data sets, or that are driven by powerful computing environments, require development of ever more sophisticated mathematical and statistical methodology, theory, and tools. DMS plays a key role in these developments, in training future researchers in the mathematical and statistical sciences, and in training the Nation’s scientific and engineering workforce.

DMS supports core research programs in algebra and number theory; analysis; applied mathematics; computational mathematics; geometrical analysis and topology; mathematical biology; probability, combinatorics, and foundations; and various areas within statistics. In addition, DMS funds national mathematical and statistical sciences research institutes; training and mentoring of a diverse group of postdoctoral, graduate, and undergraduate students; and infrastructure, such as workshops, conferences, and equipment.

Approximately 53 percent of the DMS portfolio is available for new research grants. The remaining 47 percent is used primarily to fund continuing grants made in previous years. DMS receives approximately 2,500 research proposals annually, of which less than a third receive awards.

FY 2014 Summary

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

Research

- CAREER (+\$800,000 to a total of \$4.13 million): This increase reflects a continued emphasis on fostering career development of junior mathematical scientists.
- Mathematical and Statistical Sciences Institutes (level at \$29.50 million): Eight domestic DMS-supported institutes will continue to catalyze frontier research through an array of varied scientific

programs.

- 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 DMS core programs. These NSF-wide investments include:
 - BioMaPS (+\$2.23 million to a total of \$4.15 million): Funding supports innovative research at the intersection of the mathematical and physical sciences and the biological sciences in a comprehensive new approach to acquire insight into and inspiration from the living world.
 - CIF21 (+\$4.36 million to a total of \$7.66 million): DMS research will focus on mathematical, statistical, and computational sciences, supporting theoretical and methodological developments in mathematics and statistics, the development of new models and algorithms, and visualization methods and computational tools that help solve complex scientific problems involving large and complex data sets and that enable scientific discovery and innovation. This investment expands upon some existing programs supporting research in the analysis of large data sets, development of novel algorithms, and new computational methods in mathematics and statistics. It will also support training and working activities and help develop new theoretical foundations in mathematics and statistics related to CIF21.
 - Clean Energy (+\$440,000 to a total of \$4.92 million): Increased funding will support efforts in solar energy conversion, energy storage, and smart grid technology.
 - SaTC (+\$2.0 million to a total of \$2.0 million): Addressing the challenges of cybersecurity requires multi-disciplinary expertise in human, statistical, mathematical, computational, and computer sciences. DMS invests in fundamental research in cryptographic methods, new algorithms, risk assessments, and mathematical and statistical methods for cybersecurity.
 - SEES (+\$1.0 million to a total of \$3.50 million): This investment addresses challenges in climate, hazards, sustainability, and energy research and education through data analysis, modeling, and simulation. DMS investment in SEES will also support effective training and networking opportunities for collaborations among mathematical and statistical scientists and with domain scientists.

Education

- Education for Mathematics and Statistics through Quantitative Explorations of Data (EXTREEMS-QED) (+\$2.0 million to a total of \$2.0 million): This investment supports enhanced training in computational and data-enabled science for the next generation of mathematical and statistical scientists.
- Research Experiences for Undergraduates Sites and Supplements program (REU) (+\$430,000 to a total of \$3.39 million.): All of this increased 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*.
- Other education and diversity activities (-\$1.17 million to a total of \$17.49 million): DMS invests in a number of education and diversity activities, including the Mathematical Sciences Postdoctoral Research Fellowships (MSPRF), Research Training Groups (RTG), and Mentoring through Critical Transition Points (MCTP) programs. Decreased funding here is offset by greater use of core research program awards to support graduate students and postdoctoral researchers.