

## Michael L. Norman Appointed to the Advisory Committee of the NSF's Mathematical and Physical Sciences Directorate

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Michael L. Norman, director of the San Diego Supercomputer Center at the University of California, San Diego, has been appointed to serve on the advisory committee of the Mathematical and Physical Sciences (MPS) Directorate of the National Science Foundation.

MPS is comprised of the Divisions of Astronomical Sciences, Chemistry, Materials Research, Mathematical Sciences, Physics, and the Office of Multidisciplinary Activities. These organizations provide the basic structure for MPS support of research and education.

As the largest of the NSF's nine directorates with an annual budget of \$1.4 billion, MPS' mission is make advancements on several fronts: to make discoveries about the universe and the laws that govern it; to create new knowledge, materials, and instruments which promote progress across science and engineering; to prepare the next generation of scientists through research; and to share the excitement of exploring the unknown across the nation.

"This advisory group will help guide the Mathematics and Physical Sciences Directorate in their efforts to rapidly exploit the computational and data-intensive capabilities provided by the NSF's Office of Cyberinfrastructure to enable a new kind of science - cyberscience," said Norman, who was appointed to the committee for a three-year term. "The goal is to create a coordinated, cost-efficient research cyberinfrastructure, which is the intellectual capital for universities in this day and age. MPS stands to both benefit from, and drive the requirements for this cyberinfrastructure."

SDSC, and organized research unit of UC San Diego, is now engaged in similar efforts, with innovations to merge and coordinate high-performance computing and computational science - otherwise known as the third paradigm of science - with data-intensive infrastructure and science that is now recognized as the fourth paradigm.

"This is a vigorous area of activity for us at SDSC, so my participation on this advisory committee provides an opportunity for me to share the center's research and experiences with a national audience, while learning how others are approaching similar problems," said Norman.

In addition to serving as a key resource provider for UC San Diego and the entire UC system, SDSC has several new programs and systems at the national level. Later this year SDSC will deploy *Gordon*, the first high-performance supercomputer to use a vast amount of flash memory SSDs (solid state drives) to help speed solutions now hamstrung by slower spinning disk technology. The new project is the result of a five-year, \$20 million grant from the NSF. *Gordon* should rate among the top 100 or so supercomputers in the world, capable of doing latency-bound file reads up to 10 times faster and more efficiently than any high-performance computing system today.

Norman, a distinguished professor of physics at UC San Diego and a globally recognized computational astrophysicist, was named SDSC's director in September 2010. He was named SDSC's interim director in July 2009 and chief scientific officer of the supercomputer center in June 2008.

A pioneer in using advanced computational methods to explore the universe and its beginnings, Norman was named a senior fellow of SDSC in 2000. He also directs the Laboratory for Computational Astrophysics, a collaboration between UC San Diego and SDSC resulting in the widely-used ENZO community code for astrophysics and cosmology simulations on parallel computers.

Norman is the author of over 250 publications in diverse areas of astrophysical research, including how the first stars in the universe formed and the nature of astrophysical jets. His work has earned him numerous honors, including receiving Germany's prestigious Alexander von Humboldt Research Prize, the IEEE Sidney Fernbach Award, and several HPC Challenge Awards.

Norman, a Fellow of the American Academy of Arts and Sciences, and the American Physical Society, holds a B.S. in astronomy from Caltech, an M.S. and Ph.D. in engineering and applied science from UC Davis. He completed his post doctoral work at the Max Planck Institute for Astrophysics in Garching, Germany, in 1984.

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