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## Ohio University Partners with MDM Observatory, Funds New Structure of the Universe Project

Monday Nov 01, 2004

ATHENS, Ohio - As part of a new project that will explore the structure of the universe - from the tiniest bits of matter to the largest galaxies in the cosmos - Ohio University has become a partner in the MDM Observatory, joining the University of Michigan, Dartmouth College, Columbia University and Ohio State University in the operation of two telescopes on Kitt Peak in southern Arizona.

Ohio University has committed \$1.4 million to the Structure of the Universe project as part of a new program to establish research priorities at the institution to strengthen its national and international reputation.

Researchers affiliated with the project already have made a mark on the world of physics and astronomy with studies ranging from the biggest phenomena in the universe to the smallest particles and fundamental scientific theories on how the matter in our world behaves. Discover magazine ranked two findings by Ohio University physicists in the Institute of Nuclear and Particle Physics on its Top 100 Science Stories of 2003 list: the discovery of a subatomic particle of matter called the pentaquark at No. 9 and the confirmation of the theory for charge symmetry breaking at No. 49. Members of the Astrophysical Institute are funded by agencies such as the National Science Foundation and NASA to explore cosmic structures such as black holes, galaxies and galaxy clusters.

Ohio University now joins major research institutions such as Princeton and Cal Tech in examining the link between the astronomy and physics fields and exploring fundamental issues about our universe.

"At the best universities, clearly they're asking these questions," said Kenneth Hicks, an Ohio University professor of physics who serves as director of the new project.

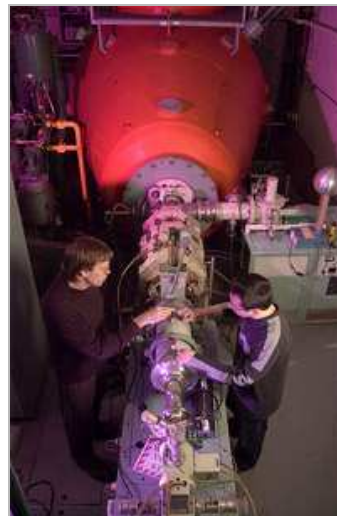
A key component of the Structure of the Universe Project is a new partnership with the MDM Observatory, a private observatory owned by a network of several major research universities that now includes Ohio University. The relationship will allow faculty and student astronomers access to 50 observing nights per year at the facility, which has two "work horse" telescopes used for research on everything from planets and asteroids to cosmology, said Tom Statler, an associate professor of physics and astronomy and director of the university's Astrophysical Institute.

"Having the guaranteed access means that we have the guaranteed ability to do the science we want to do," Statler said.

The project also will boost opportunities for student research and learning, Hicks noted, as Ohio University joins the top 30 astrophysics institutes in the nation with this level of telescope access. The university funding will cover expenses for undergraduates traveling to Arizona to make use of the observatory.

"This is a way for our students to have direct access to really top quality instrumentation at one of the best astronomical sites in the United States," Statler said. "It allows them to do things that would be impossible in Ohio."

Hicks expects that the new Structure of the Universe project will allow nuclear and particle physicists like himself - who study small matter such as quarks, protons and neutrons - to connect their findings to the astrophysical research of Statler and other astronomers. Such collaborations could provide a greater understanding of our sun, for example. It contains 99 percent of all of the matter in our solar system, and yet its interior is impossible to study directly,



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The new Structure of the Universe project includes upgrading the university's Edwards Accelerator Laboratory. Ohio University physicist Carl Brune and graduate student Catalin Matei are shown using the equipment earlier this year.

photo by: Rick Fatica

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Hicks said. Instead, physicists simulate nuclear reactions between small bits of matter in the laboratory in the hopes of better understanding this massive heavenly body.

The scientists also hope their combined expertise can be used to investigate fundamental questions about our world, Hicks added, such as what causes the universe to expand and stars to form.

"We're focused on the big questions that have been of interest to mankind since the beginning of time," Hicks said.

To support this work, the Department of Physics and Astronomy will hire three new faculty members, upgrade the Edwards Particle Accelerator and step up its partnership with the Ohio Supercomputer Center. The team also will bring in visiting scientists, host a public lecture series and sponsor a major scientific conference in five years.

The researchers, who already bring in \$1.7 million in external funding each year, expect that the new effort will help the institution attract more research dollars, bolstering Ohio University President Roderick McDavis's goal of doubling the research endeavor by 2009.

"We'll do our part by trying to increase our funding by 50 percent in the next five years," Hicks said. "It's an ambitious goal, but I think we have the potential to reach it."

Ohio University expects to name other areas of research priorities within the next few months. The institution will support selected projects over five to six budget years to help them achieve and strengthen national and international prominence in their fields.

The Structure of the Universe project is a good example of how two groups of faculty members can work together to boost their research capabilities, said Jack Bantle, vice president for research at Ohio University. It represents a new partnership between the Astrophysical Institute, led by Statler, and the Institute of Nuclear and Particle Physics, led by Professor of Physics and Astronomy Charlotte Elster.

"By collaborating closely together, they can exploit the synergies between their academic disciplines and answer scientific questions that other groups can't tackle," Bantle said. "Together they will further strengthen an already strong department and enhance its academic reputation."

Faculty involved with the project also include Markus Böttcher, Carl Brune, Daniel Carman, Steven Grimes, Brian McNamara, Allena Opper, Daniel Phillips, Joseph Shields and Louis Wright, all of the Department of Physics and Astronomy in the College of Arts and Sciences.