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## **Phillips Leads \$3.7 Million Project to Advance Nuclear Physics Experiments**

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# Phillips Leads \$3.7 Million Project to Advance Nuclear Physics Experiments

May 28, 2020

Categories: Research

Tags: Daniel Phillips, Faculty Research, Institute of Nuclear and Particle Physics, physics and astronomy news, physics and astronomy research, research



Dr. Daniel Phillips

From [Ohio University News](#)

Ohio University physicist [Dr. Daniel Phillips](#) is leading a new \$3.7 million, multi-institution effort to develop software that can create more accurate models of scientific phenomena — such as what happened in the microseconds after the Big Bang or how long a radioactive nucleus will live before it decays.

Phillips, a professor of physics and astronomy in the College of Arts and Sciences, is the lead investigator on a new National Science Foundation-funded project with statisticians, computer scientists and nuclear physicists at The Ohio State University, Michigan State University and Northwestern University. The researchers are developing the Bayesian Analysis of Nuclear Dynamics (BAND) framework to provide a publicly available set of computational tools for physicists seeking to solve a wide variety of nuclear-physics research questions.

The project is focused on creating better predictive models of scientific phenomena that nuclear physicists seek to understand. Because current models can yield very different forecasts, scientists hope the project will improve what they call the “Uncertainty Quantification” for a range of nuclear processes. BAND’s predictions for those processes will be phrased in terms of the percent probability of different outcomes happening — somewhat like the National Weather Service’s rain forecast, Phillips explained.

“One of the goals is for BAND is to be accessible to people planning nuclear physics experiments and allow them to design in such a way that cuts down the uncertainty as much as possible,” said Phillips, who is also director of the [Institute of Nuclear and Particle Physics](#). “The U.S. invests hundreds of millions of dollars in nuclear physics experiments — optimal allocation of those resources is important.”

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