UW-Madison: Kyle Cranmer chosen to lead American Family Insurance Data Science Institute

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MADISON — Kyle Cranmer, a University of Wisconsin–Madison alumnus who played a significant role in the discovery of the Higgs boson, will become the next director of the American Family Insurance Data Science Institute.

"We are excited to welcome Kyle back to UW–Madison, where he earned his PhD in physics in 2005," says Amy Wendt, associate vice chancellor for research in the physical sciences. "Kyle brings a background to the position of director that will facilitate research synergies throughout campus, connecting data scientists and domain experts working to address present-day challenges ranging from health care to education, the sciences and beyond."

Founded in 2019, the institute is working to advance discoveries that benefit society through data science research, the translation of fundamental research into practical applications, and collaboration across disciplines. The institute is a campus focal point for integrating data science into research, and one of its top priorities is to build a thriving data science community at UW–Madison.

Cranmer is currently a physics professor at New York University and will assume leadership of the institute on July 1, 2022, joining the faculty in the UW–Madison Department of Physics, with an affiliate appointment in Statistics. Brian Yandell, the David R. Anderson Founding Director of the data science institute, has served since 2019.

Cranmer arrived at data science through his contributions to the search for the Higgs boson, a fundamental particle that in the 1960s had been theorized to exist

and is responsible for giving objects in the universe their mass.

Finding evidence for the particle required navigating enormous amounts of data generated by trillions of high-energy particle collisions. Cranmer developed a method for collaborative statistical modeling that allowed thousands of scientists to work together to seek, and eventually find, strong evidence for the Higgs boson in 2012. "Shortly after the discovery, I pivoted to thinking more broadly about data science and machine learning for the physical sciences, identifying synergies and opportunities, and shaping that discussion internationally," says Cranmer. His research has expanded beyond particle physics and is influencing astrophysics, cosmology, computational neuroscience, evolutionary biology and other fields.

At NYU, Cranmer is executive director of the Moore-Sloan Data Science Environment, associated faculty at the Center for Data Science, and is affiliated with the core machine learning group. His awards and honors include the Presidential Early Career Award for Science and Engineering in 2007 and the National Science Foundation's Career Award in 2009. He was elected a 2021 Fellow of the American Physical Society.

One of Cranmer's goals for the American Family Insurance Data Science Institute is to broaden engagement in data science across campus. Drawing on his own experiences reaching across traditional academic boundaries, he aims to build partnerships between people working on data science methodology and those working in the humanities and the natural, physical and social sciences. Understanding and addressing the impact data science has on society, and the disproportionate effects it can have on marginalized people, is central to his vision for this work.

"Issues around equity, inclusion and bias, and how that impacts society, those are very real problems I think everyone can appreciate," says Cranmer. "But the way that they manifest themselves technically is much more subtle. Raising awareness of just how subtle and challenging those problems are, I think, is going to be useful for broadening the discussion across campus."

Cranmer grew up in Arkansas and was in the first graduating class of a public, residential high school for math, science and the arts. He describes the school as a "melting pot" where students interested in computer science, physics, math and engineering collaborated on projects that today might be considered data science. Frustrated by a lack of extracurricular activities at his brand-new school, Cranmer

got involved in school politics and student government.

"That was one of my first calls for leadership," he says. "I came into the school and there was nothing set up at all — no student clubs, no activities. That was a very influential moment for me — realizing that you can be part of the solution and shape the environment around you to make it better."

Cranmer looks forward to connecting and sharing ideas with people and research centers at UW–Madison. He stresses the importance of building trust, both within and outside the university, by demonstrating the potential for data science to positively affect people's lives and the world.

"With experience as a national leader in data science, Kyle is well prepared to guide the institute in partnerships with enterprise thought leaders," says Wendt. "His own research focus on data science methods that broaden participation to advance discovery in particle physics is truly rooted in the Wisconsin Idea."

For Cranmer, contributing to the Wisconsin Idea is an exciting aspect of his new role. He sees opportunities at UW–Madison to engage with the community in research, such as working with the Division of Extension and farmers on problems like agricultural sustainability, carbon capture and climate change.

"This kind of capability is very, very unique, and there are several different entry points for the Data Science Institute to be involved in such research," says Cranmer. "The role of data science would be really compelling."

Following his years of experience shaping the first wave of data science at NYU, Cranmer looks forward to leading an institute that is well positioned to have real-world impact.

"I think that's a pretty exciting thing to be a part of."