Anderson-Cook chosen for American Society of Quality's Shewhart Medal

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The American Society for Quality has selected Christine Anderson-Cook, of Los Alamos National Laboratory's Statistical Sciences group, to receive the 2018 Shewhart Medal, a career award for contributions made to quality improvement.

The medal is given to an individual who has demonstrated the most outstanding technical leadership in the field of modern quality control, especially through the development to its theory, principles, and techniques.

Her citation reads: "For exemplary leadership, service, training, research and applications in solving complex problems through statistical thinking and statistical engineering."

Anderson-Cook will receive the Shewhart Medal at ASQ's World Conference on Quality and Improvement, to be held April 30—May 2 in Seattle.

Using her PhD in statistics to support Lab mission

Anderson-Cook's work has a strong ties to the Laboratory's national security mission. She has led projects in complex system reliability, nonproliferation, malware detection and statistical design of experiments.

"One of the really exciting things about working at the Laboratory is the ability to impact the science in so many different areas," she said. "I recently concluded a 10-year project, as part of the DoD/DOE Joint Munitions Program, developing statistical methods and tools to provide improved estimates of reliability for conventional weapons."

For many munitions systems, full system tests are prohibitively expensive or just not possible in adequate numbers. By developing methods to use component or sub-system level data, the structure of the system and a much larger set of data could be used to inform reliability estimates, she explained.

"Most of the people using the methods are not trained statisticians, so the goal was to make these sophisticated statistical methods available to the engineers and scientists who need the results without them having to get into the nuts and bolts of the methods," she said.

Her team developed software tools, like SRFYDO (System Reliability Formatter for YADAS Data and Output) and VMESH (Variable and Model Evaluation for System Health), to enable complex analyses with easily interpretable results.

"I think that much of my career has been spent working on problems like this, contributing to the solution of science or engineering problems by incorporating statistical methods," she said.

About Anderson-Cook

Anderson-Cook earned her doctoral degree in statistics at the University of Waterloo in Canada. Before joining the Laboratory in 2004, she was a faculty member at Virginia Tech for eight years. Her research includes response surface methodology, design of experiments, reliability, multiple criterion optimization and graphical methods. She has led projects in complex system reliability, non-proliferation, malware detection and statistical design of experiments.

Anderson-Cook has authored more than 180 peer-reviewed papers in statistics and quality peer-reviewed journals and has been a long-time contributor to the Quality Progress Statistics Roundtable column. She has co-edited a compilation book of columns called *Statistics Roundtables: Insights and Best Practices*. The fourth edition of her book *Response Surface Methodology* with Raymond Myers and Douglas Montgomery was published in 2016.

She serves on the editorial boards of *Technometrics*, *Quality Engineering*, and *Quality and Reliability Engineering International*. Anderson-Cook is a Fellow of the American Statistical Association and the American Society for Quality. She has also won the ASQ Statistics Division's William G. Hunter Award, the National Nuclear Security Administration's Defense Programs Award of Excellence, the 26th Annual Governor's Award for Outstanding New Mexico Women, the Laboratory Student Distinguished Mentor Award and the Laboratory Postdoc Distinguished Mentor Award.

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