ASA GEORGIA CHAPTER
Winter Lecture Series

4:00 PM, Tuesday, December 15, 2020

Zoom link will be posted on https://www.amstatgeorgia.org/events

Dr. William Myers

The Procter & Gamble Company

Robust Experimental Designs for Model Calibration

A computer model can be used for predicting an output only after specifying the values of some unknown physical constants known as calibration parameters. The unknown calibration parameters can be estimated from real data by conducting physical experiments. This talk presents an approach to optimally design such a physical experiment. The problem of optimally designing physical experiment, using a computer model, is similar to the problem of finding optimal design for fitting nonlinear models. However, the problem is more challenging than the existing work on nonlinear optimal design because of the possibility of model discrepancy, that is, the computer model may not be an accurate representation of the true underlying model. Therefore, we propose an optimal design approach that is robust to potential model discrepancies. We show that our designs are better than the commonly used physical experimental designs that do not make use of the information contained in the computer model and other nonlinear optimal designs that ignore potential model discrepancies. We illustrate our approach using a toy example and a real example from industry.

About the Speaker

William (Bill) Myers is a Principal Statistician at the Procter & Gamble Company. Over his 25+ years at Procter & Gamble, he has worked with engineers and scientists to solve complex problems for many of Procter & Gamble's Billion Dollar Brands. Bill applies statistics through effective problem definition, experimental design, statistical/ predictive modeling, data visualization and data interpretation to further innovation, productivity and quality. He collaborates closely with developers of 1st Principles models and computer simulations at Procter & Gamble. He is actively involved in statistical research to develop methods to solve critical business problems. This has resulted in publications in peer-reviewed journals like *Technometrics* and *Journal of Quality Technology*. Over the years he has been actively involved in the ASA sections – *Quality & Productivity* and *Physical and Engineering Sciences*. Bill leads the Corporate Statistics Training at Procter & Gamble, which involves developing and teaching internal courses and creating curricula. The courses include Design of Experiments, Statistical Modeling, Data Mining and Machine Learning, Design and Analysis of Computer Experiments and Statistical Process Control.