EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Applied Optimization - Certainly Uncertain

ABSTRACT – The talk will start with addressing a practical optimization problem under uncertainty from the previous century, where often there had not been much left for optimization, since being feasible had been challenging already.

Both practical need and inner mathematical thirst for knowledge have mutually stimulated research in optimization under uncertainty, of which the talk will address its stochastics branch.

Simple problems confirm that only the presence of uncertainty makes them nontrivial, yet requires optimization at all. Stochastic programming problems that easily can be formulated have initialized substantial algorithmic innovation beyond the traditional convex models in continuous variables. This went hand in hand with practical paradigm changes, such as deregulation and unbundling, which will be illustrated at cases from the power and gas industries. All in all, an attempt will be made to point to fruitful interaction of stochastic programming not only with the mathematical disciplines forming its name but also with topics from algebra and analysis for which interaction might come as a surprise.

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SPEAKER BIO – **Rüdiger Schultz** is a Full Professor for Discrete Mathematics and Optimization in the Department of Mathematics at the University of Duisburg-Essen, Germany, since 1998. His doctoral and habilitation degrees in Mathematics he has received from the Humboldt University Berlin in 1985 and 1995. Dr. Schultz' primary research interests are in optimization under uncertainty, discrete optimization, and in industrial applications of mathematical optimization. His research accomplishments include seminal results on structure, stability, and algorithmic treatment of stochastic programs, in particular of models involving integer variables, risk aversion, and PDE constraints. He has made contributions to real-life applications of mathematical optimization in the power, natural gas, and chemical processes industries. He has co-authored more than 100 scientific papers. Currently, Dr. Schultz is Editor-in-Chief of the journal "Computational Management Science" and Area Editor Linear and Stochastic Optimization of "Operations Research Letters". He is serving as a member of the editorial boards of four further research journals in mathematics.

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