



Department of Mathematical Sciences  
Seminar in Stochastic Systems

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*Polyhedral Risk Measures in Stochastic Programming Models*

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*Abstract:* Measuring risk becomes important in decision making under uncertainty. We introduce polyhedral risk measures as optimal values of certain linear stochastic optimization models. Thereby, we place emphasis on multiperiod risk. Dual representations for polyhedral risk measures are derived and used to deduce criteria for their convexity and coherence. As examples we propose multiperiod extensions of the Conditional-Value-at-Risk. We show that inserting polyhedral risk measures into multistage stochastic programs is equivalent to solving a slightly extended version of such models. Furthermore, decomposition structures of stochastic programs are maintained. We also present numerical results of a stochastic programming model for optimizing the electricity portfolio of a German municipal power utility where the expected overall costs and/or certain polyhedral risk measures are minimized. This is a joint work with Andreas Eichhorn and Isabel Wegner.

Professor Römisch is one of the leading experts in the area of stochastic optimization. His research includes important contributions to the analysis of the structure, stability, approximations and asymptotic behavior of stochastic optimization models, numerical methods for mixed-integer multistage stochastic programs, scenario generation and reduction for multistage stochastic programs. Further work of Professor Römisch includes approximations and numerical methods for random equations, numerical methods for stochastic differential equations, and numerical optimal control. Professor Römisch is the leader of research teams working on major applied projects in production planning, finance, revenue management, chemical engineering, power engineering and trading under uncertainty.

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Refreshments will be provided.

For more information contact Darinka Dentcheva, Michael Zabarankin, or call 201-216-5449.