

EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Optimization Problems with Stochastic Order Constraints

ABSTRACT –Stochastic orders formalize preferences among random outcomes and are widely used in statistics and economics. We analyze stochastic optimization problems involving stochastic-order relations as constraints that relate performance functionals, depending on our decisions, to benchmark random outcomes.

We discuss the relation of univariate and multivariate stochastic orders to utility functions, conditional value at risk, and to coherent measures of risk. Necessary and sufficient conditions of optimality and duality theory for problems with stochastic order constraints involve expected utility theory, dual (rank-dependent) utility theory, and coherent measures of risk. The model provides a link between various approaches for risk-averse optimization. Some attention will be paid to the numerical solution of the problems. Several applications will be outlined.



Dr. Darinka Dentcheva

Professor & Graduate Program
Director

Department of Mathematical Sciences
Stevens Institute of Technology

SPEAKER BIO – *Dr. Darinka Dentcheva holds a PhD and a Doctor of Sciences (Habilitation) degree from Humboldt University Berlin, Germany. Her current research interests are in the area of optimization under uncertainty and risk, in which she has co-authored a popular recent monograph. She is passionate about education and has developed a new graduate curriculum as well as many new courses on both graduate and undergraduate level. Darinka Dentcheva is an Associate Editor of SIAM Journal on Optimization, SIAM Review, the Journal on Control, Optimization and Calculus of Variations of the French Society of Applied Mathematics (ESAIM), and Frontiers in Applied Mathematics. She is a member of the Publications Committee of the Mathematical Optimization Society and a past member of the Committee on Stochastic Programming of the Mathematical Optimization Society. She is the recipient of a DAAD (Deutsche Akademische Austausch Dienst) award, Davis Memorial Research Award, and Research Recognition Award of the board of trustees of Stevens Institute of Technology.*

USC Viterbi

School of Engineering
Daniel J. Epstein Department of
Industrial and Systems Engineering

TUESDAY, NOVEMBER 10, 2015

3:30PM – 4:50PM

USC ANDRUS GERONTOLOGY CENTER (GER), ROOM 206