

January 22nd, 2018
KAP 414
2:00 P.M. – 3:00 P.M.

Professor Mihai Sirbu
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**“Sensitivity Analysis of the Utility Maximization
Problem with Respect to Model Perturbations”**

Abstract: We study the dependence on a parameter for a class of non-Markovian stochastic control problems arising in mathematical finance. We consider the expected utility maximization problem and its response to small changes in the market price of risk in a continuous semimartingale setting. Assuming that the preferences of a rational economic agent are modeled by a general utility function, we obtain a second-order expansion of the value function, a first-order approximation of the terminal wealth, and construct trading strategies that match the indirect utility function up to the second order. The method, which is presented in the abstract version, relies on an increase in dimensionality and convex duality in the state variable (there is no convexity with respect to the parameter). If a risk-tolerance wealth process exists, using it as a numeraire and under an appropriate change of measure, we reduce the approximation problem to a Kunita-Watanabe decomposition.

Based on joint work with Oleksii Mostovyi.