V**o**Rträge zum Operations Research

Kolloquium des Instituts für Operations Research

Zeit: Montag, 27. Juni 2016, 16:00 Uhr

Ort: Raum 002, Gebäude 20.12

Es spricht: Prof. Dr. Roman Liesenfeld, Universität zu Köln

Zum Thema: **Likelihood based inference and prediction in spatio-temporal panel count models for urban crimes**

Abstract: We develop a panel data count model combined with a latent Gaussian spatio-temporal heterogeneous state process to analyze monthly severe crimes at the census tract level in Pittsburgh, Pennsylvania. Our data set combines Uniform Crime Reporting data with socio-economic data from the 2000 census. The likelihood of the model is accurately estimated by adapting recently developed efficient importance sampling techniques applicable to high-dimensional spatial models with sparse precision matrices. Our estimation results confirm socio-economic explanations for crime and, foremost, the broken-windows hypothesis whereby less severe crimes in a region is a leading indicator for severe crimes. In addition to ML parameter estimates, we compute several other statistics of interest for law enforcement such as elasticities (idiosyncratic, total, short-term as well as long-term) of severe crimes w.r.t. less severe crimes, one-month-ahead out-of-sample forecasts, predictive cumulative distribution functions and validation test statistics based on these cdf's.

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Die Vorträge zum Operations Research wenden sich an alle Interessierten!

Bei Rückfragen wenden Sie sich bitte an:

Prof. Dr. Oliver Grothe, Institut für Operations Research.