Barbu V.S., Beltaief S., Pergamenshchikov, S. (LMRS, University of Rouen Normandy, France) — **Robust adaptive efficient estimation for a semi-Markov continuous time regression from discrete data.**

In this presentation we consider the nonparametric robust estimation problem for regression models in continuous time with semi-Markov noises. To be more specific, we are interested in estimating an unknown function S on the basis of observations that can be in continuous or discrete time. This problem of nonparametric estimation in regression models is an important chapter of theoretical and applied statistics that has been considered in many frameworks ("signal + white noise" models, "signal + color noise" regressions based on Ornstein-Uhlenbeck processes, etc.). Our main goal is to develop nonparametric adaptive robust estimation, with the noise process with large dependence; to this end, we use a particular cases of semi-Markov processes to model the dependent noises. We construct a series of estimators by projection and thus we approximate the unknown function by a finite Fourier series. As we consider the estimation problem in an adaptive setting, i.e. in situation when the regularity of the function is unknown, we develop a new adaptive method based on the model selection procedure proposed by Konev and Pergamenshchikov (2012). First, this procedure give us a family of estimators; second, we choose the best possible one by minimizing a cost function. Under general moment conditions on the noise distribution, a sharp non-asymptotic oracle inequality for the robust risks is obtained.

REFERENCES

1. *Barbu V.S., Beltaief S., Pergamenshchikov, S.* Robust adaptive efficient estimation for semi-Markov nonparametric regression models, under revision, 2016; https://arxiv.org/abs/1604.04516v2
2. *Barbu V.S., Beltaief S., Pergamenshchikov, S.* Robust adaptive efficient estimation for a semi-Markov continuous time regression from discrete data, submitted, 2017; http://arxiv.org/abs/1710.10653