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BOOK OF ABSTRACTS

[3] Frick, K. and Marnitz, P. and Munk, A. (2013). Statistical multiresolution estimation for variational imaging: With an application in Poisson-biophotonics. *Journal of Mathematical Imaging and Vision*, **46(3)**, 370–387.

[4] Candes, E. and Tao, T. (2007). The Dantzig selector: statistical estimation when p is much larger than n. *The Annals of Statistics*, 2313–2351.

2.118 On the mean-square convergence of estimators of distribution functionals with using additional information

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Abstract: A class of nonparametric estimators of the main functional of distribution constructed with using additional information is proposed. It is shown that the use of the additional information as the knowledge of other distribution functionals in estimation of the main functional can often provide the mean square error smaller than that of estimators constructed without such additional information. For example, the mathematical expectation of a random variable can be taken as the main functional and the value of its variance can be used as the additional information. The asymptotic normality of the proposed estimators are proved and the main parts of their asymptotic mean square errors are found.

Keywords: Nonparametric estimator; Distribution functional; Additional information; Asymptotic normality; Mean square error.

2.119 On Risk Concentration

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Abstract: We study the behavior of extreme quantiles of the finite sum of heavy-tailed random variables, under multivariate second order regular variation condition. Looking at the literature, asymptotic (for high threshold) results have been obtained, one one hand when assuming (asymptotic) independence and second order regularly varying conditions on the variables, on the other hand when considering specific copula structures. We show that many models used in practice come under the purview of our assumption and provide a few examples. Moreover this ties up related results available in the literature under a broad umbrella. We deduce asymptotic risk concentration results.

Keywords: Aggregation; Multivariate regular variation; Risk measure.

References

[1] B. Basrak, R. Davis, and T. Mikosch. A characterization of multivariate regular variation. *The Annals of Applied Probability*, **12**, 908-920.

[2] L. De Haan, A. Ferreira. *Extreme Value Theory: An Introduction*. Springer-Verlag, New-York.

[3] T. Mao, and T. Hu. Second-order properties of risk concentrations without the condition of asymptotic smoothness. *Extremes*, **16**, 383-405.

[4] S.Resnick. *Heavy Tail Phenomena: Probabilistic and Statistical Modeling*. Springer-Verlag. New York.

2.120 Estimation of the expected shortfall given an extreme component under conditional extreme value model

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