

A Practical Guide to Heavy Tails: Statistical Techniques and Applications

Robert J. Adler, Raisa E. Feldman, Murad S. Taqqu, Editors

Table of Contents

I. Applications

Heavy-Tailed Probability Distributions in the World Wide Web <i>Mark E. Crovella, Murad S. Taqqu and Azer Bestavros</i>	3
Self-Similarity and Heavy Tails: Structural Modeling of Network Traffic <i>Walter Willinger, Vern Paxson and Murad S. Taqqu</i>	27
Heavy Tails in High-Frequency Financial Data <i>Ulrich A. Müller, Michel M. Dacorogna and Olivier V. Pictet</i>	55
Stable Paretian Modeling in Finance: Some Empirical and Theoretical Aspects <i>Stefan Mittnik, Svetlozar T. Rachev and Marc S. Paoletta</i>	79
Risk Management and Quantile Estimation <i>Franco Bassi, Paul Embrechts and Maria Kafetzaki</i>	111

II. Time Series

Analysing Stable Time Series <i>Robert J. Adler, Raisa E. Feldman and Colin Gallagher</i>	133
Inference for Linear Processes with Stable Noise <i>M. Calder and R.A. Davis</i>	159
On Estimating the Intensity of Long-Range Dependence in Finite and Infinite Variance Time Series <i>Murad S. Taqqu and Vadim Teverovsky</i>	177
Why Non-Linearities Can Ruin the Heavy-Tailed Modeler's Day <i>Sidney I. Resnick</i>	219
Periodogram Estimates from Heavy-Tailed Data <i>T. Mikosch</i>	241
Bayesian Inference for Time Series with Infinite Variance Stable Innovations <i>Nalini Ravishanker and Zuqiang Qiou</i>	259

III. Heavy-Tail Estimation

Hill, Bootstrap and Jackknife Estimators for Heavy Tails <i>Olivier V. Pictet, Michel M. Dacorogna and Ulrich A. Müller</i>	283
--	-----

Characteristic Function Based Estimation of Stable Distribution Parameters <i>Stephen M. Kogon and Douglas B. Williams</i>	311
---	-----

IV. Regression

Bootstrapping Signs and Permutations for Regression with Heavy-Tailed Errors: a Robust Resampling <i>Raoul LePage, Krzysztof Podgórski, Michal Ryznar and Alex White</i>	339
Linear Regression with Stable Disturbances <i>J. Huston McCulloch</i>	359

V. Signal Processing

Deviation from Normality in Statistical Signal Processing: Parameter Estimation with Alpha-Stable Distributions <i>Panagiotis Tsakalides and Chrysostomos L. Nikias</i>	379
Statistical Modeling and Receiver Design for Multi-User Communication Networks <i>George A. Tsihrintzis</i>	405

VI. Model Structures

Subexponential Distributions <i>Charles M. Goldie and Claudia Klüppelberg</i>	435
Structure of Stationary Stable Processes <i>Jan Rosiński</i>	461
Tail Behavior of Some Shot Noise Processes <i>Gennady Samorodnitsky</i>	473

VII. Numerical Procedures

<i>J. Huston McCulloch</i>	489
Table of the Maximally-Skewed Stable Distributions <i>J. Huston McCulloch and Don B. Panton</i>	501
Multivariate Stable Distributions: Approximation, Estimation, Simulation and Identification <i>John P. Nolan</i>	509
Univariate Stable Distributions: Parameterizations and Software <i>John P. Nolan</i>	527