

# Contents

Preface .....	ix
Contributors .....	xiii
<b>I. Applications</b>	
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. Paolella</i> .....	79
Risk Management and Quantile Estimation <i>Franco Bassi, Paul Embrechts and Maria Kafetzaki</i> .....	111
<b>II. Time Series</b>	
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
<b>III. Heavy-Tail Estimation</b>	
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
<b>IV. Regression</b>	
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
<b>V. Signal Processing</b>	
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
<b>VI. Model Structures</b>	
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**

Numerical Approximation of the Symmetric Stable Distribution and Density  
*J. Huston McCulloch* .....489

Table of the Maximally-Skewed Stable Distributions  
*J. Huston McCulloch and Don B. Panton* .....501

Multivariate Stable Distributions: Approximation, Estimation,  
Simulation and Identification  
*John P. Nolan* ..... 509

Univariate Stable Distributions: Parameterizations and Software  
*John P. Nolan* ..... 527