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the plane; 5. Functional Inequalities; 5.1 Introduction; 5.2 Exponential inequalities for functional empirical processes; 5.3 Exponential inequalities for functional martingales; 5.4 Weak convergence of functional processes; 5.5 Differentiable functionals of empirical processes; 5.6 Regression functions and biased length  
5.7 Regression functions for processes6. Inequalities for Processes; 6.1 Introduction; 6.2 Stationary processes; 6.3 Ruin models; 6.4 Comparison of models; 6.5 Moments of the processes at  $T_a$ ; 6.6 Empirical process in mixture distributions; 6.7 Integral inequalities in the plane; 6.8 Spatial point processes; 7. Inequalities in Complex Spaces; 7.1 Introduction; 7.2 Polynomials; 7.3 Fourier and Hermite transforms; 7.4 Inequalities for the transforms; 7.5 Inequalities in  $C$ ; 7.6 Complex spaces of higher dimensions; 7.7 Stochastic integrals; Appendix A Probability  
A.1 Definitions and convergences in probability spacesA.2 Boundary-crossing probabilities; A.3 Distances between probabilities; A.4 Expansions in  $L_2(\mathbb{R})$ ; Hermite polynomials; Bibliography; Index

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#### Sommario/riassunto

The book is aimed at graduate students and researchers with basic knowledge of Probability and Integration Theory. It introduces classical inequalities in vector and functional spaces with applications to probability. It also develops new extensions of the analytical inequalities, with sharper bounds and generalizations to the sum or the supremum of random variables, to martingales and to transformed Brownian motions. The proofs of the new results are presented in great detail.

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