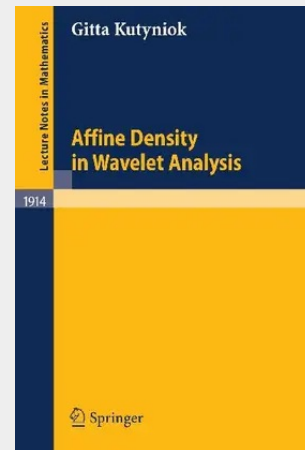


Affine Density in Wavelet Analysis

In wavelet analysis, irregular wavelet frames have recently come to the forefront of current research due to questions concerning the robustness and stability of wavelet algorithms. A major difficulty in the study of these systems is the highly sensitive interplay between geometric properties of a sequence of time-scale indices and frame properties of the associated wavelet systems.

This volume provides the first thorough and comprehensive treatment of irregular wavelet frames by introducing and employing a new notion of affine density as a highly effective tool for examining the geometry of sequences of time-scale indices. Many of the results are new and published for the first time. Topics include: qualitative and quantitative density conditions for existence of irregular wavelet frames, non-existence of irregular co-affine frames, the Nyquist phenomenon for wavelet systems, and approximation properties of irregular wavelet frames.

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