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Nota di contenuto	CONTENTS; Foreword; Preface; A Guided Tour from Linear Algebra to the Foundations of Gabor Analysis Hans G. Feichtinger, Franz Luef and Tobias Werther; 1. Introduction; 2. Basics in Linear Algebra; 3. Finite Dimensional Gabor Analysis; 4. Frames and Riesz Bases; 5. Gabor Analysis on L2; 6. Time-Frequency Representations; 7. The Gelfand Triple; 8. The Spreading Function; 9. Conclusion and Outlook; References; Some Iterative Algorithms to Compute Canonical Windows for Gabor Frames A. J. E. M. Janssen; 1. Introduction; 2. Overview; 3. Basic Tools; 4. Analysis of Recursion I to Approximate gt 5. Proposing Iterations Without Inversions 5.1. Iterations for gt; 5.2. Iterations for gd; 6. Analysis of Recursion II to Approximate gt; 7. Analysis of Recursion IV to Approximate gd; 8. Summary of Results for Iterations III and V; 9. Concluding Remarks; Acknowledgments; References; Gabor Analysis, Noncommutative Tori and Feichtinger's Algebra Franz Luef; 1. Introduction; 2. Operator Algebras of Time-Frequency Shifts; 3. Noncommutative Tori and Feichtinger's Algebra; 4. Feichtinger's Algebra as Bimodule for C ( ) and C (0) 5. Application to Gabor Analysis: Biorthogonality Relation of Wexler-

Raz 6. Conclusions; Acknowledgment; References; Unitary Matrix Functions,Wavelet Algorithms, and Structural Properties of Wavelets Palle E. T. Jorgensen; 1. Introduction; 1.1. Index of terminology in mathematics and in engineering; 1.2. Motivation; 1.2.1. Some points of history; 1.2.2. Some early applications; 2. Signal Processing; 2.1. Filters in communications engineering; 2.2. Algorithms for signals and for wavelets; 2.2.2. Subdivision algorithms; 2.2.3. Wavelet packet algorithms
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Unitary Systems, Wavelet Sets, and Operator-Theoretic Interpolation of Wavelets and Frames David R. Larson 1. Introduction; 1.1. Talks and abstracts; 1.2. Some background; 1.2.1. Interpolation; 1.2.2. Some basic terminology; 1.2.3. Acknowledgements; 2. Unitary Systems and Wavelet Sets; 2.1. The one-dimensional wavelet system; 2.1.1. Dyadic wavelets; 2.1.2. The dyadic unitary system; 2.1.3. Non-dyadic wavelets in one dimension; 2.2. N dimensions; 2.2.1. The expansive-dilation case; 2.2.2. The non-expansive dilation case; 2.3. Abstract systems; 2.3.1. Restrictions on wandering vectors
2.3.2. Group systems

Sommario/riassunto

Gabor and wavelet analyses have found widespread applications in signal analysis, image processing and many other information-related areas. Both deliver representations that are simultaneously local in time and in frequency. Due to their significance and success in practical applications, they formed some of the core topics of the program "Mathematics and Computation in Imaging Science and Information Processing", which was held at the Institute for Mathematical Sciences, National University of Singapore, from July to December 2003 and in August 2004. As part of the program, tutorial lectures