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   Nota di contenuto   An Error Resilience Strategy of a Complex Moment-Based Eigensolver:
                        Akira Imakura, Yasunori Futamura, and Tetsuya Sakurai -- Numerical
                        Integral Eigensolver for a Ring Region on the Complex Plane: Yasuyuki
                        Maeda, Tetsuya Sakurai, James Charles, Michael Povolotskyi, Gerhard
                        Klimeck, and Jose E. Roman -- A Parallel Bisection and Inverse Iteration
                        Solver for a Subset of Eigenpairs of Symmetric Band Matrices: Hiroyuki
                        Ishigami, Hidehiko Hasegawa, Kinji Kimura, and Yoshimasa Nakamura
                        -- The Flexible ILU Preconditioning for Solving Large Nonsymmetric
                        Linear Systems of Equations: Takatoshi Nakamura and Takashi Nodera
                        -- Improved Coefficients for Polynomial Filtering in ESSEX: Martin
                        Galgon, Lukas Krämer, Bruno Lang, Andreas Alvermann, Holger Fehske,

Andreas Pieper, Georg Hager, Moritz Kreutzer, Faisal Shahzad, Gerhard Wellein, Achim Basermann, Melven Röhrig-Zöllner, and Jonas Thies -- Eigenspectrum Calculation of the O(a)-improved Wilson-Dirac Operator in Lattice QCD using the Sakurai-Sugiura Method: Hiroya Suno, Yoshifumi Nakamura, Ken-Ichi Ishikawa, Yoshinobu Kuramashi, Yasunori Futamura, Akira Imakura, and Tetsuya Sakurai -- Properties of Definite Bethe–Salpeter Eigenvalue Problems: Meiyue Shao and Chao Yang -- Preconditioned Iterative Methods for Eigenvalue Counts: Eugene Vecharynski and Chao Yang -- Comparison of Tridiagonalization Methods using High-precision Arithmetic with MuPAT: Ryoya Ino, Kohei Asami, Emiko Ishiwata, and Hidehiko Hasegawa -- Computation of Eigenvectors for a Specially Structured Banded Matrix: Hiroshi Takeuchi, Kensuke Aihara, Akiko Fukuda, and Emiko Ishiwata -- Monotonic Convergence to Eigenvalues of Totally Nonnegative Matrices in an Integrable variant of the Discrete Lotka-Volterra System: Akihiko Tobita, Akiko Fukuda, Emiko Ishiwata, Masashi Iwasaki, and Yoshimasa Nakamura -- Accuracy Improvement of the Shifted Block BiCGGR Method for Linear Systems with Multiple Shifts and Multiple Right-Hand Sides: Hiroto Tadano, Shusaku Saito, and Akira Imakura -- Memory-Saving Technique for the Sakurai–Sugiura Eigenvalue Solver using the Shifted Block Conjugate Gradient Method: Yasunori Futamura and Tetsuya Sakurai -- Filter Diagonalization Method by Using a Polynomial of a Resolvent as the Filter for a Real Symmetric-Definite Generalized Eigenproblem: Hiroshi Murakami -- Off-Diagonal Perturbation, First-Order Approximation and Quadratic Residual Bounds for Matrix Eigenvalue Problems: Yuji Nakatsukasa.- An Elementary Derivation of the Projection Method for Nonlinear Eigenvalue Problems Based on Complex Contour Integration: Yusaku Yamamoto.- Fast Multipole Method as a Matrix-Free Hierarchical Low-Rank Approximation: Rio Yokota, Huda Ibeid, and David Keyes.- Recent Progress in Linear Response Eigenvalue Problems: Zhaojun Bai and Ren-Cang Li.

Sommario/riassunto	This book provides state-of-the-art and interdisciplinary topics on solving matrix eigenvalue problems, particularly by using recent petascale and upcoming post-petascale supercomputers. It gathers selected topics presented at the International Workshops on Eigenvalue Problems: Algorithms; Software and Applications, in Petascale Computing (EPASA2014 and EPASA2015), which brought together leading researchers working on the numerical solution of matrix eigenvalue problems to discuss and exchange ideas – and in so doing helped to create a community for researchers in eigenvalue problems. The topics presented in the book, including novel numerical algorithms, high-performance implementation techniques, software developments and sample applications, will contribute to various fields that involve solving large-scale eigenvalue problems.