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Conclusions; Appendix 2.A Parameterization of the equivalence classes [L]; Appendix 2.B Automorphy factors; Acknowledgments; References; Chapter 3 Numerical Challenges in a Cholesky-Decomposed Local Correlation Quantum Chemistry Framework; 3.1 Introduction; 3.2 Local MRSDCI; 3.2.1 MRSDCI; 3.2.2 Symmetric group graphical approach; 3.2.3 Local electron correlation approximation; 3.2.4 Algorithm summary; 3.3 Numerical Importance of Individual Steps; 3.4 Cholesky Decomposition; 3.5 Transformation of the Cholesky Vectors
3.6 Two-Electron Integral Reassembly 3.7 Integral and Execution Buffer; 3.8 Symmetric Group Graphical Approach; 3.9 Summary and Outlook; Acknowledgments; References; Chapter 4 Generalized Variational Theorem in Quantum Mechanics; 4.1 Introduction; 4.2 First Proof; 4.3 Second Proof; 4.4 Conclusions; Acknowledgments; References; Section 3 Mathematical and Statistical Models in Life and Climate Science Applications; Chapter 5 A Model for the Spread of Tuberculosis with Drug-Sensitive and Emerging Multidrug-Resistant and Extensively Drug-Resistant Strains; 5.1 Introduction; 5.1.1 Model formulation
5.1.2 Mathematical Analysis 5.1.2.1 Basic properties of solutions; 5.1.2.2 Nature of the disease-free equilibrium; 5.1.2.3 Local asymptotic stability of the DFE; 5.1.2.4 Existence of subthreshold endemic equilibria; 5.1.2.5 Global stability of the DFE when the bifurcation is "forward"; 5.1.2.6 Strain-specific global stability in "forward" bifurcation cases; 5.2 Discussion; References; Chapter 6 The Need for More Integrated Epidemic Modeling with Emphasis on Antibiotic Resistance; 6.1 Introduction; 6.2 Mathematical Modeling of Infectious Diseases
6.3 Antibiotic Resistance, Behavior, and Mathematical Modeling

Sommario/riassunto

Illustrates the application of mathematical and computational modeling in a variety of disciplines With an emphasis on the interdisciplinary nature of mathematical and computational modeling, Mathematical and Computational Modeling: With Applications in the Natural and Social Sciences, Engineering, and the Arts features chapters written by well-known, international experts in these fields and presents readers with a host of state-of-the-art achievements in the development of mathematical modeling and computational experiment methodology. The book is a valuable guide to the methods, ideas,