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Nota di contenuto	Foreword; Preface; Short Biography of Lin; Mathematics of Lin; Organizing Committees; List of Participants; Program; Welcome Speech of Weiping Zhang; Speech of Boju Jiang; CONTENTS; Part A Invited Contributions; The Modified Calabi-Yau Problems for CR-manifolds J. Cao and S.-C. Chang; 0. Introduction; 1. Bounded solutions to d = on manifolds with negative curvature; 2. The modified Calabi-Yau problems for singular spaces and CR-manifolds; A. Sup-harmonic functions on Alexandrov spaces with nonnegative sectional curvature B. The generalized Calabi problems for Kahler domains with boundaries C. The Calabi-Escobar type problem for Kahler domains with boundaries; Acknowledgments; References; On Picture (2+1)-TQFTs M. Freedman, C. Nayak, K. Walker and Z. Wang; 1. Introduction; 2. Jones

representations; 2.1. Braid statistics; 2.2. Generic Jones representation of the braid groups; 2.3. Unitary Jones representations; 2.4. Uniqueness of Jones-Wenzl projectors; 3. Diagram TQFTs for closed manifolds; 3.1. ""d-isotopy"", local relation, and skein relation; 3.2. Picture classes; 3.3. Skein classes; 3.4. Recoupling theory
3.5. Handles and S-matrix 3.6. Diagram TQFTs for closed manifolds; 3.7. Boundary conditions for picture TQFTs; 3.8. Jones-Kauffman skein spaces; 4. Morita equivalence and cut-paste topology; 4.1. Bimodules over picture category; 4.2. Cutting and paste as Morita equivalence; 4.3. Annualization and quantum double; 5. Temperley-Lieb-Jones categories; 5.1. Annular Markov trace; 5.2. Representation of Temperley-Lieb-Jones categories; 5.3. Rectangular Tempeley-Lieb-Jones categories for low levels; 5.3.1. Level=1, d2 = 1; 5.3.2. Level=2, d2 = 2; 5.3.3. Level=3, d2 = 1 + d or d2 = 1
5.4. Annular Temperley-Lieb-Jones theories for low levels 5.4.1. Level=1, d2 = 1; 5.4.2. Level=2, d2 = 2; 5.4.3. Level=3, d2 = 1 + d or d2 = 1; 5.5. Temperley-Lieb-Jones categories for primitive 4th roots of unity; 5.6. Temperley-Lieb-Jones categories for primitive 2nd root of unity, rodd; 6. The definition of a TQFT; 6.1. Redined labels for TQFTs; 6.2. Anomaly of TQFTs and extended manifolds; 6.3. Axioms for TQFTs; 6.4. More consequences of the axioms; 6.5. Framed link invariants and modular representation; 6.6. Verlinde algebras and Verlinde formulas
7. Diagram and Jones-Kau man TQFTs 7.1. Diagram TQFTs; 7.2. Jones-Kau man TQFTs; 8. WRT and Turaev-Viro SU(2)-TQFTs; 8.1. Flagged TLJ categories; 8.2. Turaev-Viro Unitary TQFTs; 8.3. WRT Unitary TQFTs; 9. Black-White TQFTs; 9.1. Black-white TLJ categories; 9.2. Labels for black-white theories; 9.2.1. Level=2, d2 = 2; 9.2.2. Level=3; 9.3. BW TQFTs; 10. Classification and Unitarity; 10.1. Classification of diagram local relations; 10.2. Unitary TQFTs; 10.3. Classication and unitarity; Appendix A. Topological phases of matter; Ground states manifolds as modular functors
Elementary excitations as particles

Sommario/riassunto

This unique volume, resulting from a conference at the Chern Institute of Mathematics dedicated to the memory of Xiao-Song Lin, presents a broad connection between topology and physics as exemplified by the relationship between low-dimensional topology and quantum field theory.The volume includes works on picture (2+1)-TQFTs and their applications to quantum computing, Berry phase and Yang-Baxterization of the braid relation, finite type invariant of knots, categorification and Khovanov homology, Gromov-Witten type invariants, twisted Alexander polynomials, Faddeev knots, generalized Ricci flo