1.	Record Nr.	UNINA9910154743003321
	Autore	Kauffman Louis H.
	Titolo	Temperley-Lieb Recoupling Theory and Invariants of 3-Manifolds (AM-134), Volume 134 / / Louis H. Kauffman, Sostenes Lins
	Pubbl/distr/stampa	Princeton, NJ : , : Princeton University Press, , [2016] ©1994
	ISBN	1-4008-8253-2
	Descrizione fisica	1 online resource (308 pages) : illustrations
	Collana	Annals of Mathematics Studies ; ; 315
	Disciplina	514/.224
	Soggetti	Knot theory Three-manifolds (Topology) Invariants
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Frontmatter -- Contents -- Chapter 1. Introduction -- Chapter 2. Bracket Polynomial, Temperley-Lieb Algebra -- Chapter 3. Jones-Wenzl Projectors -- Chapter 4. The 3-Vertex -- Chapter 5. Properties of Projectors and 3-Vertices -- Chapter 6. -Evaluations -- Chapter 7. Recoupling Theory Via Temperley-Lieb Algebra -- Chapter 8. Chromatic Evaluations and the Tetrahedron -- Chapter 9. A Summary of Recoupling Theory -- Chapter 10. A 3-Manifold Invariant by State Summation -- Chapter 11. The Shadow World -- Chapter 12. The Witten-Reshetikhin- Turaev Invariant -- Chapter 13. Blinks 3-Gems: Recognizing 3-Manifolds -- Chapter 14. Tables of Quantum Invariants -- Bibliography -- Index
	Sommario/riassunto	This book offers a self-contained account of the 3-manifold invariants arising from the original Jones polynomial. These are the Witten-Reshetikhin-Turaev and the Turaev-Viro invariants. Starting from the Kauffman bracket model for the Jones polynomial and the diagrammatic Temperley-Lieb algebra, higher-order polynomial invariants of links are constructed and combined to form the 3-manifold invariants. The methods in this book are based on a recoupling theory for the Temperley-Lieb algebra. This recoupling theory is a q-deformation of the SU(2) spin networks of Roger Penrose.

The recoupling theory is developed in a purely combinatorial and elementary manner. Calculations are based on a reformulation of the Kirillov-Reshetikhin shadow world, leading to expressions for all the invariants in terms of state summations on 2-cell complexes. Extensive tables of the invariants are included. Manifolds in these tables are recognized by surgery presentations and by means of 3-gems (graph encoded 3-manifolds) in an approach pioneered by Sostenes Lins. The appendices include information about gems, examples of distinct manifolds with the same invariants, and applications to the Turaev-Viro invariant and to the Crane-Yetter invariant of 4-manifolds.