

## Contents

Preface	ix
$\pi_1^\infty$ and infinite simple homotopy type in dimension 3 VALENTIN POÉNARU	1
Cubulations mod bubble moves LOUIS FUNAR	29
Numerical presentations of tortile categories IVELINA BOBTCHEVA AND FRANK QUINN	45
On Quinn's invariants of 2-dimensional CW-complexes IVELINA BOBTCHEVA	69
The quadratic form of a link AKIO KAWAUCHI	97
Quantum $SU(2)$ -invariants of three-manifolds associated with the trivial first cohomology class modulo two HITOSHI MURAKAMI	117
An element of infinite order in TQFT-representations of mapping class groups GREGOR MASBAUM	137
The perturbative $SO(3)$ invariant of homology circles TOMOTADA OHTSUKI	141
Configuration space integrals and invariants for 3-manifolds and knots ALBERTO S. CATTANEO	153
The multivariable Alexander polynomial for a closed braid H. R. MORTON	167
Boundary links and h-split links KAZUAKI KOBAYASHI	173
Finite type invariants of ribbon 2-knots KAZUO HABIRO, TAIZO KANENOBU, AND AKIKO SHIMA	187
Arrangement of Markov moves for 2-dimensional braids SEIICHI KAMADA	197

A criterion for signed unknotting number PAWEŁ TRACZYK	215
On some extensions of Artin's braid relations H. NENCKA	221
Asymptotic behavior of energy of polygonal knots JUN O'HARA	235