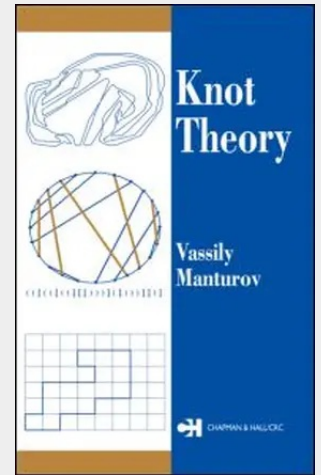


Knot Theory

Since discovery of the Jones polynomial, knot theory has enjoyed a virtual explosion of important results and now plays a significant role in modern mathematics. In a unique presentation with contents not found in any other monograph, Knot Theory describes, with full proofs, the main concepts and the latest investigations in the field. The book is divided into six thematic sections. The first part discusses "pre-Vassiliev" knot theory, from knot arithmetics through the Jones polynomial and the famous Kauffman-Murasugi theorem. The second part explores braid theory, including braids in different spaces and simple word recognition algorithms. A section devoted to the Vassiliev knot invariants follows, wherein the author proves that Vassiliev invariants are stronger than all polynomial invariants and introduces Bar-Natan's theory on Lie algebra representations and knots. The fourth part describes a new way, proposed by the author, to encode knots by d-diagrams. This method allows the encoding of topological objects by words in a finite alphabet. Part Five delves into virtual knot theory and virtualizations of knot and link invariants. This section includes the author's own important results regarding new invariants of virtual knots. The book concludes with an introduction to knots in 3-manifolds and Legendrian knots and links, including Chekanov's differential graded algebra (DGA) construction. Knot Theory is notable not only for its expert presentation of knot theory's state of the art but also for its accessibility. It is valuable as a professional reference and will serve equally well as a text for a course on knot theory.



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