Title:	Knot Theory and 3-Manifolds
Authors:	Mondal, Sayan
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Abstract:	This thesis focuses on the study of knots and their invariants and investigates the inter- section between knot theory and 3-manifolds. Spheres Sn can be embedded in a space in different ways. Even though the images are homeomorphic the homeomorphisms cannot be extended to the complement space in general. We use a stronger notion of isotopy to distinguish them too. In codimension one using the the Jordan Schonflies theorem we can show that there exists only one type of knot in R2 . Torus knots become ambient isotopic if they have same homotopy upto sign. We use different knot invariants(functions on knot isotopy classes or functions on knots invariant under isotopy) to distinguish knots. Tubular neighbourhoods of trivial Knot (Solid Tori) in R3 can be glued by exchanging the meridian and longitude to give the sphere S3 . This construction can be generalized for closed orientable connected PL 3-manifold where we get a decomposition of the manifold using g-handle bodies identified along their boundary. Heegaard splitting of Lens space can be understood by its cellular decomposition. Dehn-Lickorish theorem allows writing any orientation preserving homeomorphism of a closed, connected, orientable surface S as a product of Dehn-twists. So the homeomorphism in 3 - manifold construction can be stud- ied using twists along some curves, whose tubular neighbourhood is a solid torus. It allows us to bridge Knot theory and 3-manifolds.
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