

On knots and links in lens spaces

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Abstract

We study some aspects of knots and links in lens spaces. Namely, if we consider lens spaces as a quotient of the unit ball B^3 with suitable identification of boundary points, then we can project the links on the equatorial disk of B^3 , obtaining a regular diagram for them. The main results are:

- a complete finite set of Reidemeister type moves establishing equivalence, up to ambient isotopy;
- a Wirtinger type presentation for the fundamental group of the complement of the link;
- a diagrammatic method giving the torsion of the first homology group of the link.

We also compute Alexander polynomial and twisted Alexander polynomials of this class of links, and we show their correlation with Reidemeister torsion. Furthermore, we prove that the twisted Alexander polynomials of a local link vanish and its Alexander polynomial gives information about the order of the torsion of the link homology.

AMS Classification: Primary 57M27; Secondary 57M05.