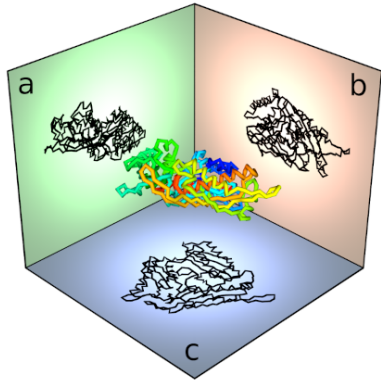
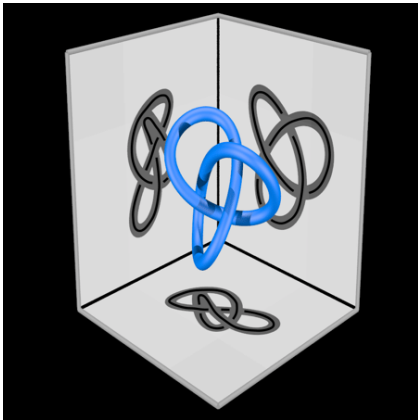


What are...knots?

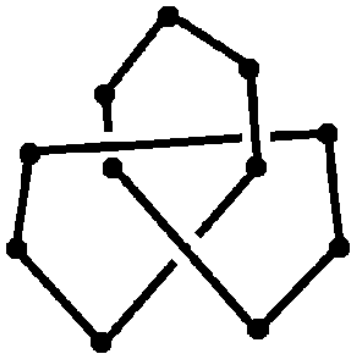
Or: Why knot?!

Knotting made easy

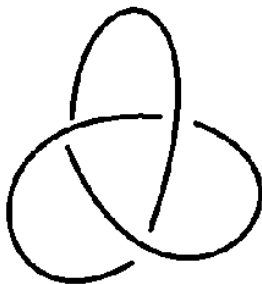


- ▶ A knot is a closed string (a circle S^1) in three spaces
- ▶ Knots are studied by projections to the plane **Shadows**
- ▶ To make this precise is a bit annoying - let us have a look ;-)

Polygonal knots



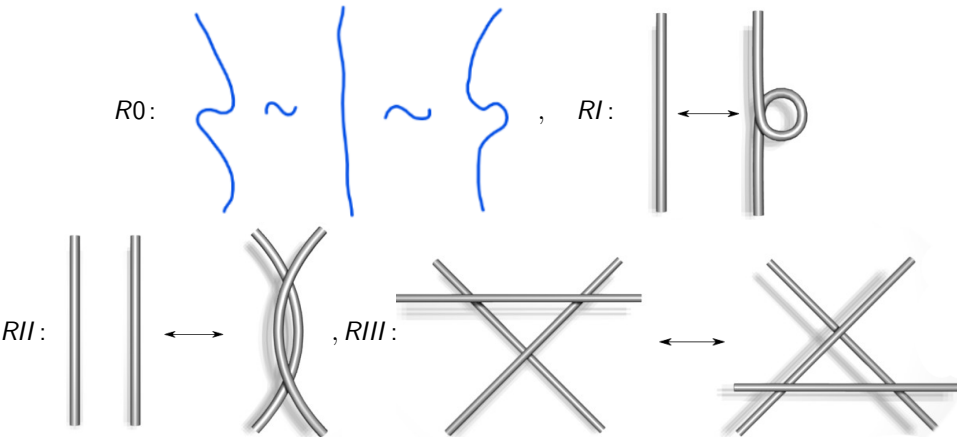
(a) polygonal



(b) smooth

-
- ▶ We only consider knots that are equivalent to a polygon
 - ▶ These knots admit regular projections
 - ▶ Regular basically means no silly triple or worse points

Combinatorial knots



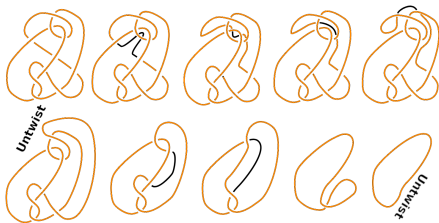
- ▶ **Strategy** Define a knot as a (regular) projection
- ▶ **Slight catch** Multiple shadows represent the same knot
- ▶ **Strategy (revision)** Define a knot as a projection modulo Reidemeister moves

For completeness: A formal statement

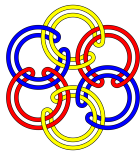
Reidemeister theorem:

Polygonal knots/appropriate equivalence \Leftrightarrow combinatorial knots

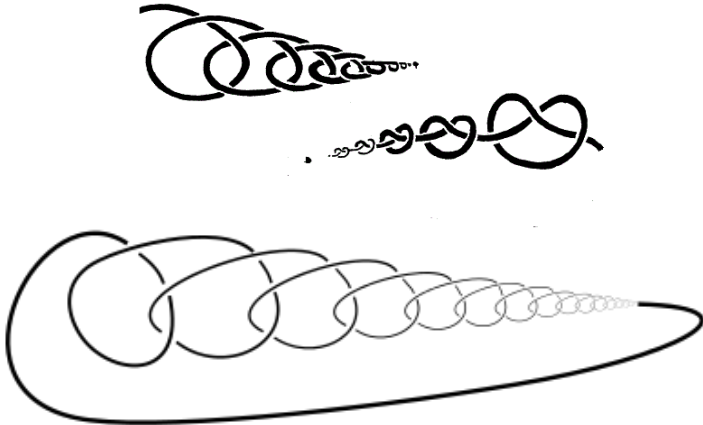
- Task: distinguish knots Keyword: knot invariants



- In these videos link (multicomponent knot) = knot



Knotting made hard



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- ▶ A knot is tame if it can be thickened up to a solid torus
 - ▶ Tame knots \Leftrightarrow polygonal knots
 - ▶ Wild (= not tame) knots have pathological behavior and we rule them out

Thank you for your attention!

I hope that was of some help.