Info

This note, that was found here, as a part of a collection
is written (completely with human hands) by Rupadarshi Ray,
was created on January 30, 2024 8:46:42 PM,
was last modified on May 17, 2026 7:36:37 PM, and
was exported on September 7, 2026 3:09:45 PM.

Knot and link diagrams on $\mathbb{R}^2$

Definition. Knot diagrams on $\mathbb{R}^2$

An **polygonal knot diagram** is a tuple

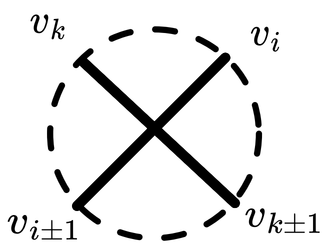
$$D := ((v_1, \ldots, v_n), c(D) \to l(D))$$

where $(v_1, \ldots, v_n)$ is a finite sequence of points on $\mathbb{R}^2$ upto

- an even permutation, where it is called **oriented knot diagram**
- an even permutation or reversing the order, called **unoriented knot diagram**

such that

- the set of lines $l(D) := \{\overline{v_i v_{i+1 \bmod n}} : 1 \leq i \leq n\}$ only intersects in the manner



  called **crossings**
  - whose set is denoted by $c(D)$
  - where for each such crossing there is a particular pair of lines $$c(D)\ting which is *undercrossing* and the other being the *overcrossing* denoted by

- an **arc** of a diagram is the sequence of lines that starts with an *undercrossing* and ends at an *undercrossing* whose set is denoted $a(D)$

It is equivalent to a *4-valent graph with an [[sett.graph.theory and knot diagrams theory logically separate.

Definition. Definition

A **link diagram** L is a finite set of such sequences.

- alternating knot diagram
- reduced alternating knot diagram
- Reidemeister moves
- crossing number $|c(D)|$
- unknotting number $u(D)$
- 3-colorings $\tau_3(D)$
- connected sum

Current note has 0 direct children and 0 total descendants.

- stem
  - Knots
    - Knot and link diagrams on $\mathbb{R}^2$

And it has 3 siblings.

- stem
  - Knots
    - Braids
    - Knot and link diagrams on $\mathbb{R}^2$
    - Knots in $\mathbb{R}^3$