

Talk in Roland's UG Seminar.

1. Knots, invariants, a theory of "all" knot invariants.

2. F.T. invariants, chord diagrams, $V, W, FI, 4T$, the Fundamental Theorem, } For \sim Fixed m
 surprisingly hard!

V_m, A_m, \dots

3. The 2T relation... 

$$W_{H,m}(D) = N^k$$

$$W_{GM}(D) = \begin{cases} 1 & k=0 \\ 0 & \text{otherwise.} \end{cases}$$

I could tell you why FI is unimportant, or can be avoided, instead, $W_C \dots$

Given m ,

is there a $V_{C,m}$ w/ $W_m(V_{C,m}) = W_C$?

4. $A = \bigoplus A_m$ $W_C: A \rightarrow \mathbb{Q}[z]$ by

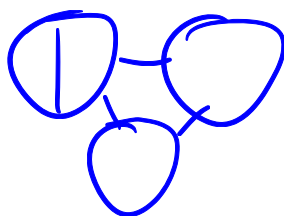
$$W_C(D) = z^{\deg D} W_{C,m}(D)$$

or $W_C = \sum z^m W_{C,m}$

Q: is there $V_C: A \rightarrow \mathbb{Q}[z]$ s.t.

$$W(V_C) = \sum z^m W(V_C // \pi_{z^m}) = W_C$$

5. W_C extends to s.t.



$$W_c(\text{circle with vertical dashed line}) = z W_c(\text{square}) \quad W_c(O^k) = \delta_{k1}$$

Guess: $\exists V_c : \{\text{links}\} \rightarrow \mathbb{Q}[z]$

- s.t.
1. $\dots = V_c(\text{square with diagonal}) = V_c(\text{square})$
 2. $V_c(O^k) = \delta_{k1}$

Prop IF V_c exists, it is unique.

Thm V_c exists; it is the Conway polynomial.

$$\begin{aligned}
 & \text{Crossing with } \uparrow \text{ and } \rightarrow \\
 &= \text{Crossing with } \uparrow \text{ and } \leftarrow + \text{Crossing with } \uparrow \text{ and } \rightarrow + \text{Crossing with } \downarrow \text{ and } \leftarrow \\
 & \quad - \text{Crossing with } \downarrow \text{ and } \rightarrow
 \end{aligned}$$

$$\text{Diagram 1} - \text{Diagram 2} = \dots$$

$$\text{Diagram 3} + \text{Diagram 4} = \text{Diagram 5} + \text{Diagram 6}$$

