

$$\text{Crossing} = \text{Two parallel lines with arrows}$$

claim mod  $K_3$ ,

$$\text{Vertical line with crossings} = \text{Vertical line with loop and crossing}$$

$$\text{Crossing}_{+,-} + \text{Crossing}_{+,-} + \text{Crossing}_{-,+} = 0$$

$$|Z| = 11$$

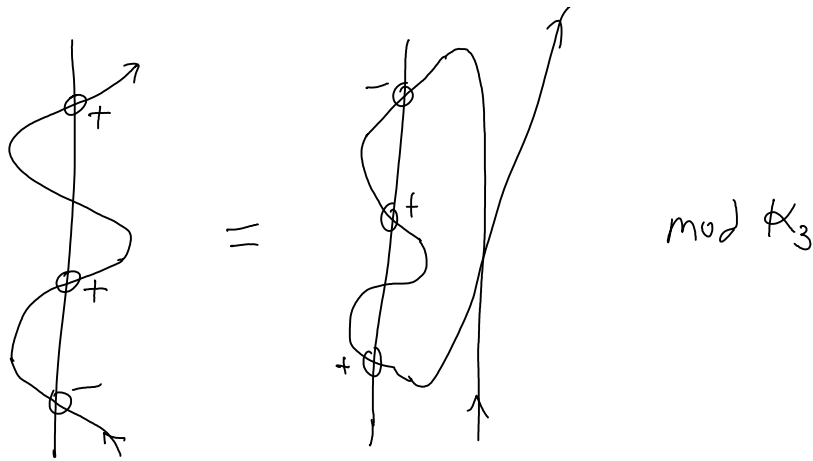
$$\text{Crossing}_{-,+} + \text{Crossing}_{+,-} + \text{Crossing}_{-,+}^{\text{blue loop}} = 0$$

$$\Rightarrow \text{Crossing}_{-,+} = -(\text{Crossing}_{+,-}^{\text{blue loop}} + \text{Crossing}_{+,-})$$

$$\text{Crossing}_{-,+} = \text{Crossing}_{+,-}^{\text{blue loop}} + \text{Crossing}_{+,-}^{\text{blue loop}} - \text{Crossing}_{+,-}$$

$$\text{Complex diagram} = \pm \text{Crossing}_1 \pm \text{Crossing}_2 \pm 2 \text{Crossing}_3 \pm 2 \text{Crossing}_4$$

Tentative Proof



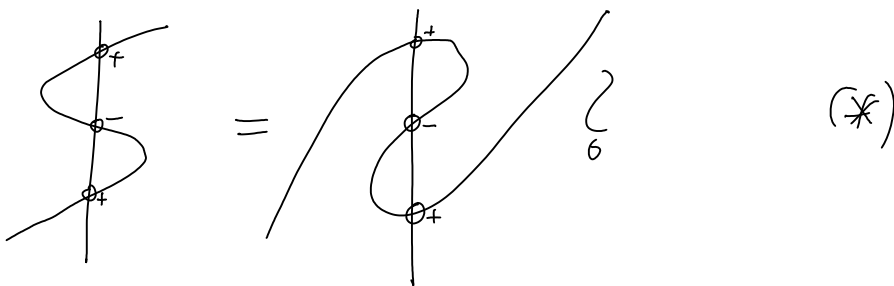
Expand both sides:

IF all crossings are real, get  $\cancel{X} = \cancel{X}$  ✓ by detour

IF two crossings are real, get  $2)(+ \cancel{X} = 2 \cancel{X} (+)$

IF one or zero are real, the cancellation is obvious.

can we get the same out of



IF all crossings are real, get  $\cancel{X} = \cancel{X}$

IF two crossings are real, get  $2X + \cancel{X} = 2X + \cancel{X}$

IF one or zero are real, the cancellation is obvious.

Is there a more symmetric way of drawing (\*)?

