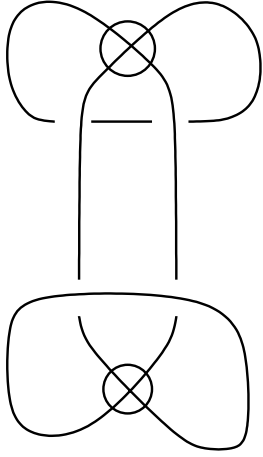


## Kishino's Knot



- Not detected by the bracket polynomial.  
 $\langle \mathbf{K} \rangle = 1 = \langle \bigcirc \rangle$
- Not detected by the fundamental group.

$$\pi_1(\mathbf{K}) = \pi_1(\bigcirc)$$

- This virtual knot diagram is detected by the 3-strand bracket polynomial, but this invariant is difficult to compute.

- Question 1: Are there more non-trivial virtual knot diagrams that are not detected by the bracket polynomial and the fundamental group?

Answer: YES !

- Question 2: Is there an easier way of detecting these virtual knot diagrams than computing the 3-strand bracket polynomial?

Answer: YES !

