What Are w-Knots?

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Recall knots = \( P_A \times \mathcal{X} \mid \mathcal{X} = \{1, \ldots, d\} \times \mathcal{Y} \) and trivalent graphs = \( P_A \times \mathcal{X} \mid \mathcal{X} = \{1, \ldots, d\} \times \mathcal{Y} \).

Likewise let w-trivalent graphs = \( P_A \times \mathcal{X} \mid \mathcal{X} = \{1, \ldots, d\} \times \mathcal{Y} \).

Corresponding 4-handles:

Select corresponding generator relations:

Operations

select relations

\( \{ \mathcal{X} = \mathcal{Y} \} \)

w-trivalent graphs

Likewise let w-trivalent graphs = \( P_A \times \mathcal{X} \mid \mathcal{X} = \{1, \ldots, d\} \times \mathcal{Y} \).

Corresponding 4-handles:

Select corresponding generator relations:

Operations

No annulus unknot:

No disk unknot:

Challenge Do the Reimnecker