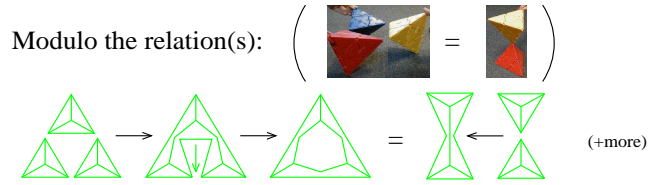
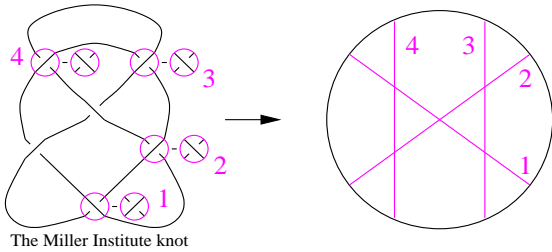


Knotted Trivalent Graphs, Tetrahedra and Associators

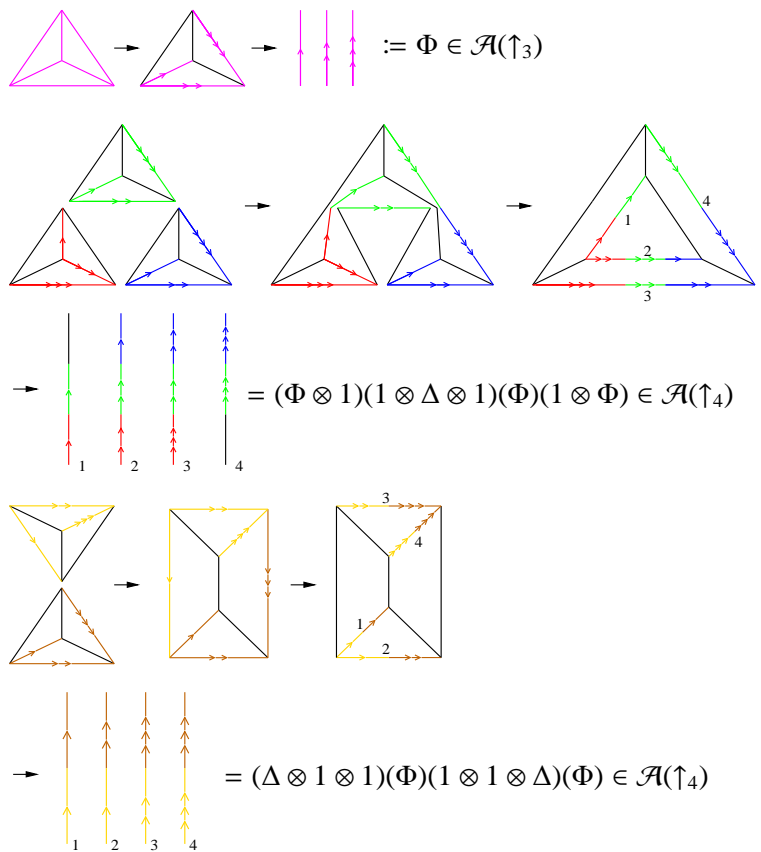


Goal: $Z: \{\text{knots}\} \rightarrow \{\text{chord diagrams}\}/4T$ so that

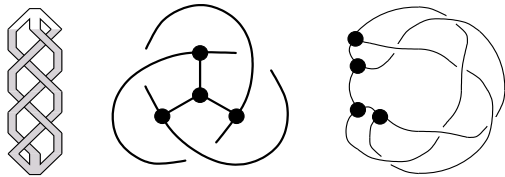


Claim. With $\Phi := Z(\Delta)$, the above relation becomes equivalent to the Drinfel'd's pentagon of the theory of quasi Hopf algebras.

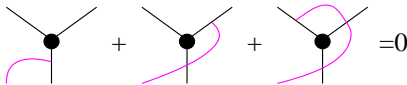
Proof.



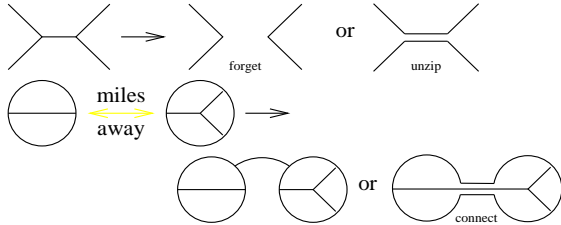
Extend to Knotted Trivalent Graphs (KTG's):



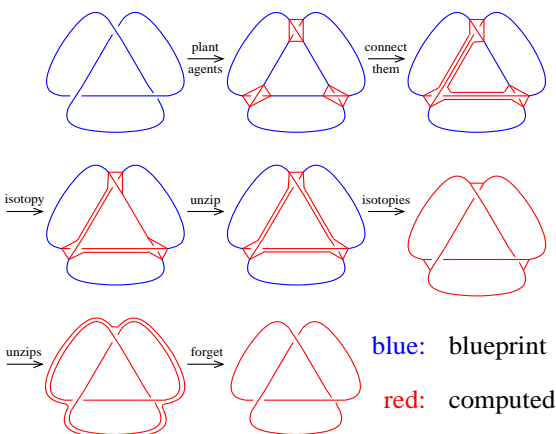
Need a new relation:



Easy, powerful operations:



Using operations, KTG is generated by ribbon twists and the tetrahedron Δ :



Ribbon Knots and Algebraic Knot Theory.

