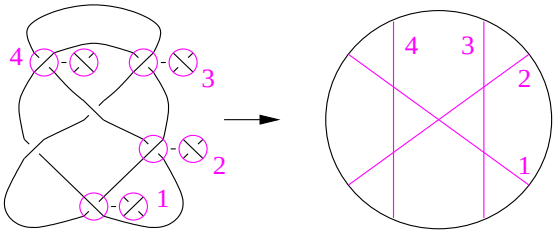
Dror Bar-Natan: Talks: Louvain-1506:

Knotted Trivalent Graphs, Tetrahedra and Associators

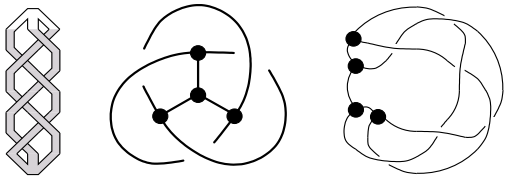
ω :=http://www.math.toronto.edu/~drorbn/Talks/Louvain-1506 Handout, video, and links at ω/

Goal: Z:{knots}−>{chord diagrams}/4T so that

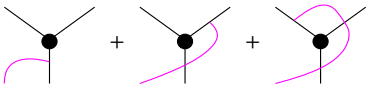


The Miller Institute knot

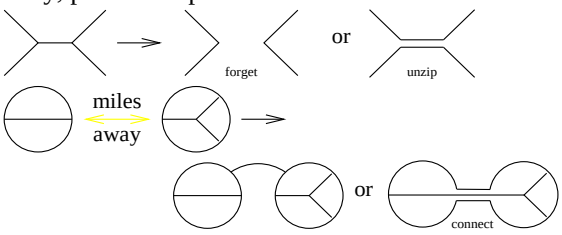
Extend to Knotted Trivalent Graphs (KTG's):



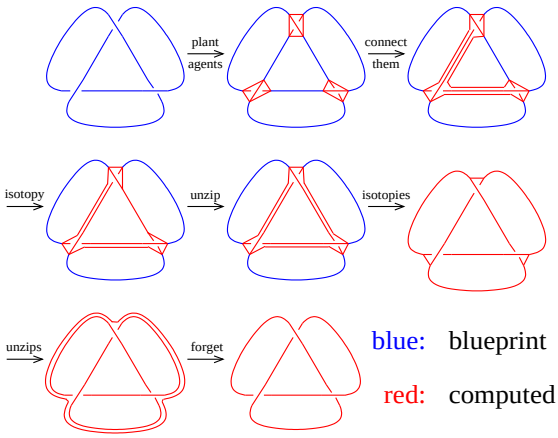
Need a new relation:



Easy, powerful operations:



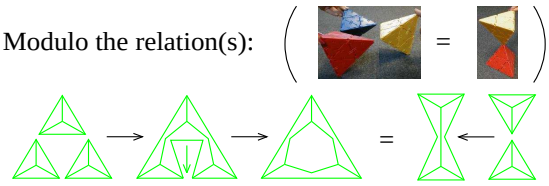
Using operations, KTG is generated by ribbon twists and the tetrahedron :



blue: blueprint

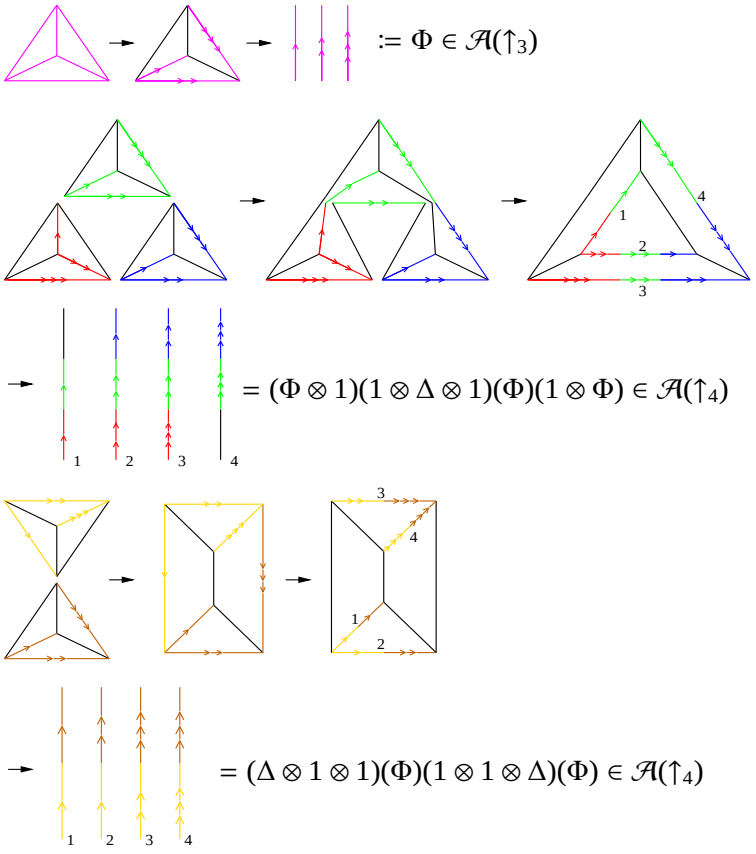
red: computed

Modulo the relation(s):

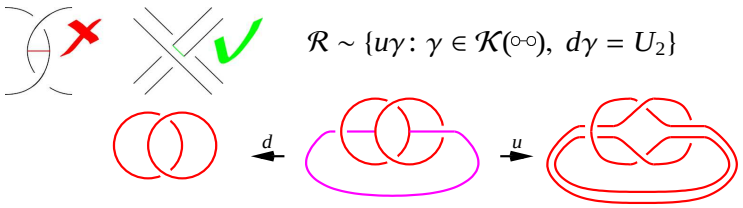


Claim. With $\Phi := Z(\triangle)$, the above relation becomes equivalent to the Drinfel'd's pentagon of the theory of quasi Hopf algebras.

Proof.



Ribbon Knots and Algebraic Knot Theory.



Video and more at http://www.math.toronto.edu/~drorbn/Talks/Louvain-1506/